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THE SICK INDIVIDUAL AS A BIOLOGICAL PROBLEM

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The above title has a harsh sound. It is surgical in its ring: cut it out, drain it or sew it up. As we progress in this discussion I trust the title, as useful and as true as it is, will be tempered by thought in which sympathy, not slush, and sympathetic understanding will find their place. Such paths may lead far from the shop of the apothecary and the operating amphitheatre.

Conditions and situations broad in their scope and perhaps indefinite in their designation are difficult to define, even though they may be very real. Perhaps if they could be defined and catalogued they would be marred and suffer a loss in their significance. God, love, law resist a definition, and yet we not only respect them, but tie to them. It would create an unhappy situation if we denied them. The same form of thought applies to conditions which are tangible, or at least ascertainable—for example, a state of disease, which we designate sickness or an illness. In these states we, as physicians, tend to isolate and card-index certain of the particularities of these conditions in order to make a definition through a diagnosis, and when we do, we fail to see the wholeness of disease as it expresses itself as a biological phenomenon whether this be in an ameba or in man. Analysis usually leads to detailed understanding; synthesis develops a composite picture of a state as a whole. There are analytical physicians and synthetic physicians. In the latter group are to be found the individuals who appreciate analysis only as it enables them to see compositely and understand the sick individual, the illness in its entirety.

Variation is certainly one of the most interesting characteristics of disease. This quality not only shows itself in tissue changes and in the symptoms produced by such changes, but in the intensity and significance of the symptoms as modified by the psychical status of the individual in which they develop. With due regard for the factor of variation and the difficulty of formulating an exacting definition for disease, such a definition may be worth while if it possesses breadth, and by having this quality stimulates not only thought, but investigation. Likely a modification of Herbert Spencer's statement in this connection remains our best attempt at a definition of disease in a broad sense: that it is a state which prevents an organism from relating itself to its environment. This definition is eminently worth while because it is not specific and therefore has an element of scope and application in it. The definition is only concerned with the physical and therefore is more than incomplete for the thoughtful physician who realizes more and more the significance, often the dominating role played by the psychical in preventing an individual from relating himself to life in a useful and a happy fashion. Unhappiness inevitably leads to physical incapacity.

The lack of specificity in the above definition, the factor of elasticity in it, makes it most useful. Such a definition takes one away from isolated entities as pneumonia, pellagra and the neuroses and asks us to see sick individuals in such diseased states as a

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whole, as biological problems, as organisms so modified by tissue processes other than those of a normal order that the individual is not only unable to relate himself to himself from within, both physically and chemically, but he is also unable to effect and maintain an outward workable relationship. He is a sick individual detached from his normal environment and for a period only usefully related to his bed. The splendid and stimulating task of the real physician, "The Biologically Minded Physician"—not of the very important but card-indexing specialist—is to ascertain, not the isolated, but the composite cause of this maladjustment and then to employ those measures which will to some extent or entirely relate this sick person to his environment, whatever that environment has to be. Modifications of the environment which facilitate adaptation may be possible, but an evolution from an illness usually does not work this way any more than organic evolution has. The individual or species attempting survival must be the active agent in effecting this survival through processes both physical and psychical which lead to adaptation. There can be no more important challenge both to the head and the heart than such a thrilling adventure. The physician serves in some small measure as the hand of nature, employing first the methods of nature, and as adjuncts other agencies—chemicals, surgical intervention, and above all, sound advice—in an attempt to relate a life so that it may not only function effectively, but may live in adjusted beauty.

In attempting such an adjustment the biological physician, never the mechanical and too often thoughtless dispenser of drugs, may have as his ideal the complete physical and psychical restoration of a sick individual to what he hypothecates is the normal. The ideal is entirely worth while. We cannot live happily without the reach for the ideal, but it is well to realize that a reconstitution to the normal may not only be impossible, it may be unwise. We are attempting to relate, not to make perfect, so that the persistence of a modified physical or psychical state may in itself be an instrument for adaptation and survival. Such modified physical factors, departures from the once normal, enabled certain species of animals to survive in difficult surroundings. The same order of thought should find its place in guiding the sick individual. We no longer become overexcited in reducing body temperature to the normal unless the fever as such is the cause for certain symptoms which are detrimental for survival. In pneumonia there is a rather definite relationship not only between the height of the temperature curve and antibody formation, but between the numerical increase in polynuclear leukocytes and their ability to engulf and destroy pneumococci. An elevation in blood pressure above a so-called normal may not be harmful and should not be designated a symptom of disease. This elevation may be essential for renal function in the changed kidney environment in which it has to operate. The symptoms of sickness are not only guides to disturbed organ function which may require correction; they may be symptoms of an adapted life functioning likely at a lower level of physiological effectiveness, but through such function at a lower level enabling life to go on with a fair degree of adaptation. The thoughtful physician must ascertain these levels at which, not sick, but changed life can find itself and in part relate itself. Tissues so often do just this. They find in their attempt at repair or in the aging process that their ideal normal cannot be attained or maintained. They either repair themselves as structurally changed tissues of an adult order or revert to an embryonic type of tissue. Not infrequently when such processes are accomplished, the cells of a functional nature which constitute these tissues not only live as functional units, but are found to have acquired through such a change in form and an assumed change in chemical constitution a resistance to further injury. Such tissues are held for a period in a state of resistance at a certain functional level, and not only life, but life with a degree of protection, has related itself in one or more organs for the welfare of the organism as a whole. Such thoughts would retard the learned physician from too active intervention in modifying the symptoms of an illness or the changes in tissues. He would ask himself the reason for these symptoms and these changes which life, ever attempting to live, has established.

When the biological problem of the sick individual presents itself to a biological adjuster (the physician), not to an ephemeral and often thoughtless rectifier, the cause for the departure from the normal expressing itself as faulty adaptation must be ascer-

tained; a diagnosis must be made. Often, however, a perfect, a complete diagnosis is more necessary for the welfare and happiness of the physician than it is for the patient. A physician can become so insistent in his demand for a meticulous type of diagnosis that certain more important aspects of an illness may be overlooked. If we hold fast to the biological concept in this discussion we may not necessarily have to have a name attached to the maladjusted individual in order to attempt to relate him. A diagnosis, especially the type arrived at through the intervention of mercenary and half-baked specialists, may not be of much value, and it may dim the vision and mar the judgment of the interpreter of these findings. It may keep the physician from seeing the sick individual as a whole, which is after all the main point in the practice of medicine. The more nearly a complete diagnosis can be obtained, of course, the better it is for the patient and the adjuster; for the latter then finds himself in a position not only to guide judiciously, but to administer various chemicals in a scientifically accurate fashion. My reason for even raising the question as to the binding necessity for a complete diagnosis in an illness is due to two observations: first, that a certain number of more recently trained physicians appear to feel an obligation to use well nigh every known diagnostic procedure, necessary or unnecessary, in order to arrive at a very specialized type of diagnosis; and secondly, that a number of this same fine group of people feel that it is wrong to do anything in an illness towards an adjustment until some mechanical appliance indicates exactly how such an adjustment can be effected. Such physicians, not overtrained, but without breadth of understanding and an appreciation of the natural corrective tendencies on the part of tissues, may be more interested in the autopsy findings than in attempting an adjustment with or without the complete diagnosis. The sick individual is not primarily concerned with the beauty of his tissue changes as revealed at the autopsy table. The splendid training now offered by most medical schools, based as it is on an understanding of the natural sciences, biology, chemistry and physics, should create a respect for natural forces—the urge of living things to effect an adjustment, if time is allowed, through rest, best found in sleep, together with nourishment, fluid and warmth.

The above approach to a maladjusted individual may be insufficient even though it is basic, and here it is that highly specific information, scientifically applied, may exert its influence in a dramatic fashion. We need only to mention the value of digitalis in certain stages of congestive heart failure, nicotinic acid in pellagra, and the selective influence of the sulfonamide group of chemicals as agents which prevent physical catastrophies and bridge over chasms for the medical adjuster as he attempts to relate the individual as a whole. The employment of such agents in terms of their full value is dependent upon specific information based on a correct and exacting type of diagnosis, which information can generally be obtained without the use of all of the related and unrelated diagnostic procedures which are now available. I am not speaking against diagnostic detail. I am speaking for reasonableness based on judgment.

Recently I have had the pleasure of consulting a learned lawyer. He did not mechanically extricate me from prison; neither did he present me with a long, sectioned, wordy opinion. He talked with me for an hour or more on two occasions, and to my amazement when his bill was requested I learned that I was indebted to him for a considerable sum. I am wondering if there is not a lesson here for the physician. This adjuster of social relationships to existing law advised me to do this and not to do that, or in case I had to proceed in my wilfulness that it would be best for me to take such and such a course of action and to go just so far and no further. He appeared to understand my point of view. He was thoughtful, considerate and gave me the benefit of his reasoning. Advice based on a process of reasoning dependent upon thought may be unusual with certain types of physicians. Their hurry to write something in the form of a prescription, to inject something, or to cut something out precludes thoughtfulness and leads to a mechanical procedure in place of one which necessitates time and which should be full of sound guidance. With the urge of the living stuff to return to a workable normal much may be accomplished by medical advice, by the sane guidance of the wise biologically minded physician who, with a knowledge of the genetic background of his patient, reinforced by adequate diagnostic information, may have such a sweep in his understanding that suggestions even

of a simple nature may lead to a restoration or an improvement in health. Advice following perhaps hours of talk would appear to be most effective in certain individuals who have failed to localize a tissue disturbance structurally so that it may be surgically removed and who do not need a chemical to blunt their consciousness and lessen self control. An increasing number of people become unrelated physically by mental states so diverse that they even fail to partake of a name for purposes of localization. Physical adjustment becomes an easy procedure when contrasted with the many instances of conscious or unconscious psychical unrest which unrelate individuals and which may finally express themselves by structural tissue changes. The life we now lead is producing more and more individuals who are unhappy. The cause for this unhappiness can not be found with a microscope or a bronchoscope, and very frequently not by a certain type of psychiatrist who cares primarily to name the unhappiness. The thoughtful, patient, sympathetic medical adjuster, ever breeding trust and confidence, is the individual for such situations. Such tasks are difficult. They have their success in the silences and they often demand all there is of "both fortitude and delicacy".

The life of the biological adjuster necessitates an appreciation of specific values, of measurable incidents; but if the wholeness of this life is to be attained it must understand the importance of change and movement towards and away from that which is designated normal. The reason for these changes must be understood in order for adjustments to be made as life flows through different age periods as health and as disease. The learned physician as the biological adjuster of this life must be specific; he needs to measure and record and card-index, but over and above this type of knowledge he must have understanding of the unrelated individual as a whole which will enable him to apply specific measures in the hope of adjusting not a part, but an entity as a related and stabilized individual to that environment in which he has to blend himself in an adjusted, workable and a happy life.

Pott's Disease.—Tuberculosis of the spine is seen rarely nowadays, and its rarity should make one more alert, since to miss the diagnosis may lead to serious consequences.—Frank R. Ober, M.D.: Lame Back, J. M. Soc. State of New Jersey, 37:504 (October) 1940.

THE BOWMAN GRAY SCHOOL OF MEDICINE OF WAKE FOREST COLLEGE

THOMAS T. MACKIE, M. D.
NEW YORK

Mr. President, Honored Guests, Members of the Faculty, and Students of the Bowman Gray School of Medicine of Wake Forest College:

Since 1902 Wake Forest College has offered a two year medical course covering the laboratory and the preclinical subjects. At the end of these two years students have been compelled to seek admission to other schools in order to complete their medical education. This has not, it is true, been difficult of accomplishment. The Wake Forest College School of Medicine has been well and favorably known. Its academic standards have been high. Yet the need for transfer to other centers of medical education has had real and inherent disadvantages. The student body after the second year has been widely dispersed, and transfer to other institutions has unavoidably entailed not only adjustment to a new academic environment, but lack of continuity in the philosophy of medical education. The community and the state have lost young practitioners, since the recent graduate tends to settle in the general vicinity of the medical school in which he has been trained, provided suitable opportunities are available. These are important disadvantages.

Tonight we are assembled in this auditorium to signalize an event of great, and, we hope, far-reaching significance. The generosity of the Bowman Gray Foundation, and of residents of this city, together with the cooperation of the Boards of Trustees of Wake Forest College and of the Baptist Hospital, has permitted the College to expand the scope of its academic activities. In the future it will carry its students to the completion of their professional education. Hereafter the Bowman Gray School of Medicine of Wake Forest College will confer upon the members of its graduating class the degree of Doctor of Medicine.

The institution of this new school inevitably will exert a profound effect upon the

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Address made at the opening of the Bowman Gray School of Medicine of Wake Forest College, Winston-Salem, September 11, 1941.

community, upon the faculty, and upon the student body.

To the community, the gathering of medical teachers, and the bedside instruction essential to education in the art of medicine, imply greater, more effective, and more widespread medical care of the sick. The increasing emphasis placed upon the teaching of preventive medicine and public health practice promises greater protection of the community against transmissible and communicable diseases. And this, in turn, implies lessened incidence of disease and a lighter burden on government for the care of the indigent sick.

To the faculty, the opening of this new school presents a unique and challenging opportunity—an opportunity which comes to few medical teachers. Many of the special problems inherent in medical education today require imagination, courage, departure from certain highly conventionalized and pedantic educational concepts, and the substitution of newer philosophies, for satisfactory solution. The modern school of medicine inescapably has placed upon it serious responsibilities in the field of the mutual relationships between the academic institution and practitioners of medicine on the one hand, and the general public and government on the other. These have been created by such diverse factors as costs of medical care, uneven distribution of physicians and hospitals throughout the country, the responsibilities of state and city for the care of the indigent, and the responsibility of government, federal, state, and local, to protect the population against communicable and epidemic disease. This has led of necessity to the establishment of Federal, State, and Municipal Departments of Health, which, for effective administration, require not only the understanding of the public, but the closest cooperation on the part of schools of medicine and practitioners of medicine. Centers for medical education are slowly realizing that their responsibility to their students does not cease with the granting of the degree of Doctor of Medicine. There is a further obligation to provide, for physicians resident in areas remote from large hospitals and institutions of learning, the opportunity to receive advanced instruction in more recent methods of diagnosis and treatment. Progress in medicine and the ideal in medical education require the pursuit of sound research and scientific achievement. This must be so balanced and so controlled that it provides stimulus and instruction to the student, yet does not detract from a high standard of clinical teaching. Finally, there is the challenge to the medical educator presented by the age-old question: should the school endeavor to offer a uniform and simplified system of instruction geared to the capacities of the less able members of each class —competent mediocrity such an objective might be termed—, or should it strive to give the maximum to its most brilliant students and "deil take the hindermost"?

To the students, this school would seem to offer a unique educational opportunity. In terms of geographical medicine, North Carolina presents a meeting ground of diseases usually restricted to northern latitudes and certain special conditions endemic in the more southern states and in the tropics. Among the latter may be included such important entities as malaria, the dysenteries, endemic pellagra, hookworm disease, and endemic typhus fever, conditions rarely seen in the university hospitals in the North.

The opportunity to observe and to study the phenomena presented by such a diversity of clinical material implies not only a broader medical education, but the foundation for a sounder basic philosophy of medical practice. To those whose major interest lies in the philosophic aspects of the medical sciences, there are many immediately available problems which will amply repay energetic and competent research. Furthermore, the future growth and development of this medical school offer a field of opportunity in medical education for its competent graduates.

It is perhaps peculiarly appropriate that the month of September in the year 1941 should witness the opening of a new school of medicine. With the passage of each week the United States appears to be approaching more closely the brink of actual participation in the European conflict. Already the needs of our military and naval services have made large demands upon the medical profession. If, in the future, we are projected into the maelstrom, more than forty thousand physicians will be required by our armed forces. These of necessity will be withdrawn from civilian life and practice. Already the state of North Carolina has disproportionately few physicians.

It is appropriate that this state, which

has one of the purest and most direct traditions of Elizabethan culture, should take yet another step forward in the fields of the arts and the sciences. North Carolina has already made important contributions to medicine. In 1937 your sister school at Duke University made one of the great advances of modern medicine—the demonstration that nicotinic acid is a specific cure for endemic pellagra which has caused so much chronic illness and economic loss throughout the Southern states.

The economic and population factors of the state are peculiarly suitable. The mixture of racial groups presents particular problems in medicine and public health, and the distribution of population between urban and rural sections creates environmental factors important both in medical teaching and in public health administration.

The growth of modern medical knowledge may be divided into certain more or less well-defined phases which necessarily overlap to a greater or lesser extent. First came the era of study of the effects of disease upon the organic structure of the human body—the work of Laennec, Virchow, and the school of the great pathologists. Then came investigation into the causes of disease—the researches of Pasteur, Koch, and their successors which demonstrated the role of bacteria. Meanwhile clinicians were studying the manifestations of abnormality within the human body, classifying and codifying their observations, and constructing the clinical pictures of specific disease entities. This clinical research culminated in our own country in the work of Sir William Osler. More recently we have seen the extraordinary development of therapeutic medicine in the fields of antisera and of chemotherapy.

Despite the fact that this latter field has obviously been only superficially scrutinized, we have already entered upon still a new era in the development of the medical sciences. It is a matter of a generation only since the discovery of the first vitamin. In the last twenty years the number and significance of these specific food factors have been greatly elaborated. The term nutrition, not so long ago largely restricted to diet preparation, now implies a growing appreciation of the role of diet in the cause, the prevention, and the cure of many disease states, as diversified in nature as rickets, pellagra, cirrhosis of the liver, and experimental cancer in animals. The future we may not read, yet it seems not improbable that from the study of nutrition will evolve the solution for many of the present day problems of senescence.

The responsibilities which rest upon this new school of medicine, faced by these manifold problems and opportunities, must be evident to all. The future is but cumulative judgment upon the present. This judgment will be based upon the scientific productiveness of the school, the standards of excellence and accomplishment of its graduates in the varied fields of the medical sciences, and the discharge of the responsibilities of the school to the community. Yet the judgment of the future will be based not solely upon the standards maintained within these academic walls. The community has its own responsibility in the success of this new institution. Without the moral and material support implicit in a convinced public opinion, education strives in vain for progress.

I am sure I voice the feelings of this audience in the expression of my own—a brilliant future for the Bowman Gray School of Medicine of Wake Forest College.

The Prevention of Deafness.—According to statistics there are about fifteen million people in the United States with defective hearing. Of this number there are approximately three million children who hear less than one-half as well as the normal child. These handicapped, or potentially handicapped, individuals make a social, economic and, in the present emergency, defense problem that deserves the attention not only of otologists, but of the whole medical profession and general public.

The prevention of deafness, especially in children, and the rehabilitation of individuals already handicapped by deafness, is a problem that cannot be solved alone by the otologist who sees only a small percentage of this army of unfortunates. The other thousands do not seek aid, either because they do not know where and what to seek, or else they have given up in hopeless despair. The first step in solving this problem is the enlightenment of the public as to the frequency and seriousness of this affliction and the methods that may be used to overcome it.

In a program of education and rehabilitation the most active agency today is The American Society for the Hard of Hearing and its chapters throughout the country. This society was founded for the mutual assistance of its members and has the distinction of being the first group of handicapped people in the history of the world to organize for its own rehabilitation. However, its help is not limited to its members, but is willingly given without charge to any individual with impaired hearing. In giving advice on the selection of hearing aids, on instruction in lip reading, and on choosing vocations for the deaf, this society and its chapters are of invaluable aid. Their ability to help solve social and economic problems outside the scope of the otologist is of immense importance. — James E. Davis: Help Conserve Hearing, Connecticut State M. J. 5:754 (October) 1941.

THE CORRELATION BETWEEN BLOOD PRESSURE AND THE CONCENTRATION OF SULFOCYANATES IN THE BLOOD

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There are many references in the literature to the use of sulfocyanates for the reduction of high blood pressure. Almost all writers agree that sulfocyanates produce some reduction of blood pressure in a high percentage of cases but that other cases do not respond to treatment; also, that there is a considerable element of unpredictable danger in the use of sulfocyanates unless a careful study is made of the blood concentration of sulfocyanates in all patients under treatment[1].

Some of the earlier observers relied on the determination of sulfocyanates in the urine. Their results suggest that of sulfocyanates given by mouth or intravenously, 80 per cent may be recovered as sulfocyanates in the urine. In their computations, the difference between urinary output and the dosage of sulfocyanates represented the amount retained in the blood stream. There was no consideration of the amount manufactured in the body[2].

Goldring and Chasis also reported high percentages of sulfocyanate found in all body tissues except bone in a patient who died of sulfocyanate poisoning, and showed in contrast the absence (by their methods) of sulfocyanates in some parts of the body of a patient who had received no sulfocyanates. More sensitive methods of analysis show sulfocyanates present in all body tissues.

Various methods of determining blood sulfocyanate content have been used. In all our earlier work, the blood protein was precipitated with trichloracetic acid and filtered. To the filtrate was added ferric nitrate to form the red ferric sulfocyanate. The Dubosque colorimeter was used for color comparisons with standard solutions of known strength. This technique is sufficiently accurate for determinations to guide therapy.

Results of Treatment

A study of patients being treated with sulfocyanates for hypertension in our clinic during the past several years showed that with a few significant exceptions there was a characteristic drop in systolic and diastolic pressures as the blood sulfocyanate level rose[1a & b]. When treatment was stopped, there was a gradual rise in the systolic and diastolic pressures, accompanied by a fall in blood sulfocyanate levels, until the former levels of blood pressure and blood sulfocyanate were reestablished. Subsequent periods of treatment and rest from treatment gave the same results. So striking and constant were these changes that this study was undertaken last fall (1940) to determine whether any correlation exists between natural blood sulfocyanate levels and blood pressure levels.

Selection of Patients

It was apparent that subjects of both sexes were needed for this study who would represent a good cross section of ages, blood pressure, and physical health, and who would be in comparable environments. It appeared to be important that all subjects be kept under control with regard to physical activity, rest, diet, and the use of tobacco. These precautions were prompted by the knowledge that sulfocyanates are end products of protein metabolism.

Two such groups were studied. Through the courtesy of Dr. J. W. Ashby, Superintendent of the North Carolina State Hospital, and of Dr. Felda Hightower, State Prison physician, we were given samples of blood from all persons admitted to both institutions. Samples were collected the second morning after admission, before breakfast and before any tobacco was used. On admission, all subjects were at rest for observation, and in both institutions the diet was ordinarily the same for each subject. Apparently we had as close a control over the environment, diet, and activities of the subjects as was possible.

At the State Prison, the diet contains an average of protein 145 Gm., fat 185 Gm., and carbohydrate 575 Gm., with an estimated

Presented before the Staff of St. Agnes Hospital, Raleigh, July 8, 1941, and the Conference on the Analysis and Interpretation of Biological and Nutritional Problems, North Carolina State College, July 11, 1941.

1. (a) Caviness, V. S., Umphlet, Peasley Bell, and Satterfield: Sulfocyanates in the Treatment of Hypertension, North Carolina M. J. 2:283-288 (June) 1941.
(b) Barker, M. H.: Blood Cyanates in the Treatment of Hypertension, J. A. M. A. 106:762-767 (March 7) 1936.
(c) Nichols, J. B.: Pharmacologic and Therapeutic Properties of Sulfocyanates, Am. J. M. Sc. 170:735-747 (November) 1925.
2. (a) Smith, R. G. and Malcolm: Sulfur and Thiocyanate Excretion in Cyanide Poisoning, J. Pharmacol. and Exper. Therap. 40:457-471 (December) 1930.
(b) Goldring and Chasis: Thiocyanate Therapy in Hypertension, Arch. Int. Med. 49:321-329 (February) 1932.

average daily intake of about 4500 calories. This is probably within average limits for laborers. At Dix Hill the diet contains an average of protein 131 Gm., fat 81 Gm., and carbohydrate 309 Gm., with an average daily intake of 2900 calories.

Methods

It was obvious that more accurate and sensitive methods of analysis would be necessary for these studies. The methods employed previously in our work were not suitable for determinations of the natural quantities of sulfocyanate found in the blood of patients not on sulfocyanate therapy.

The Evelyn photoelectric colorimeter with the proper filter was found to be suited for our purposes[3]. The filter of wave length 440 mu is the correct filter for this work. Two substances might interfere with these tests: hemoglobin and bilirubin[4]. No other substances appear to be present in the blood stream in sufficient quantity to produce demonstrable interference. The hemoglobin was removed from the samples by using fresh serum and prolonged centrifugation. Bilirubin was eliminated by the filter. Bilirubin has a wave length of 520 mu and is outside the wave length of the 440 mu filter used in this work. Tests on pure sulfocyanate with a Coleman Spectrophotometer determined the wave length to be used.

Serum protein was precipitated from fresh serum by 10 per cent trichloracetic acid and filtered. Ferric nitrate was added to form a yellow to cherry red color. Color readings were made in the Evelyn photoelectric colorimeter. Several workers have reported on the accuracy and sensitiveness of this method. We found it to be quite satisfactory in all samples encountered. The accuracy of the work is further shown in the rechecks as given in table 1.

Controls

Studies of 241 cases have been made. In many cases, duplicate or triplicate determinations have been done.

Of the subjects, 147 were prisoners and 94 were mental cases. At the prison the ages ranged from 15 to 72; at the State Hospital the ages ranged from 21 to 83. At the prison, all the subjects were males, slightly more than half being white. At the State Hospital, all the patients were white and all except three were males.

TABLE 1
Duplicate determinations of blood samples taken from same patients on different days

No.	*mg.KCNS/100cc. blood serum* 1	2	*Difference*
48	1.46	1.56	0.10
22	0.53	0.72	0.19
66	0.81	1.18	0.37
37	2.04	1.85	0.19
71	0.36	0.44	0.08
16	1.28	1.51	0.23
69	1.71	1.90	0.19
64	0.86	1.09	0.23
74	1.46	1.46	0.00
86	1.14	1.23	0.09
153	0.58	0.86	0.18
32	0.72	0.81	0.09
43	1.23	1.32	0.09
87	1.32	1.09	0.23
38	1.32	1.28	0.04
45	1.32	1.18	0.14
107	1.23	1.00	0.23
103	0.58	0.63	0.05
149	0.63	0.76	0.13
19	1.18	1.18	0.00
67	0.95	1.38	0.43
100	1.04	0.86	0.18
129	0.67	0.72	0.05
72	0.40	0.67	0.27
26	1.56	1.56	0.00
140	0.63	0.58	0.05
134	1.04	1.00	0.04
131	1.04	1.14	0.10
42	0.72	0.81	0.09
		Sum	4.06
		Mean	0.14

Most of these samples were replicated within one week. All samples used were taken from the prison.

At the prison, practically all subjects were robust and in good physical condition except those with hypertension. At the State Hospital, some of the subjects were debilitated and in very poor physical condition when studied on admission.

A limited number of determinations have been made on clinic and office patients. The results are in line with the figures of the two groups discussed in this report. However, owing to lack of proper controls over clinic and office patients, they have not been included in this report.

As a further control, all determinations have been made by the same chemist using a photoelectric colorimeter.

Classification of Findings

Unfortunately, there are no accepted exact standards of normal or abnormal blood pressure. It is rather generally conceded

3. Evelyn, K. A.: A Stabilized Photoelectric Colorimeter with Light Filters, J. Biol. Chem. 115:63-75 (August) 1936.
4. (a) Ginsburg, Emanuel, and Benotti, Norbert: Determination of Sulfocyanates in Serum After the Administration of Its Salts, J. Biol. Chem. 131:503 (December) 1939.
   (b) Germeinhardt, K.: The Sulfocyanate Content of Plants, Chem. Abstracts 33:2181, 1939.

that a systolic pressure of 140 is too high. In order to evaluate the findings in this work, pressures have been divided into four groups in order to establish a working basis and not in any effort to set up arbitrary standards. For the purposes of this study, any systolic pressure below 106 has been termed low; pressures from 106 to 130 have been termed normal; pressures from 131 to 140 have been termed border-line; and all pressures above 140 have been considered high. It is recognized that such figures may be questioned and that isolated cases might not properly be so classified. For example, a person who has had a sustained extremely high pressure might develop symptoms of low blood pressure were the systolic pressure reduced too rapidly to 150. But these figures apply to untreated cases, and the division into groups is for the purpose of analyzing the results of this study. A further division into smaller groups would not affect the curves materially.

To determine the stability of the blood sulfocyanate level for any individual, repeat tests were made of many individuals at intervals of a week (table 1). These subjects were selected at random.

TABLE 2

Grouping	*No. of Patients*	*Blood KCNS Average*	*Mean*	*Pooled standard deviation*	*Probable error*
Dix Hill					
BP					
— - 105	10	1.048			
			1.093		
106 - 130	34	1.106			
				.463	.312
131 - 140	12	.858			
			.892		
141 - —	38	.904			
Prison					
BP					
— - 105	9	1.424			
			1.255		
106 - 130	91	1.238			
				.427	.288
131 - 140	19	1.071			
			.970		
141 - —	28	.905			
Total					
BP					
— - 105	19	1.226			
			1.206		
106 - 130	125	1.202			
				.441	.297
131 - 140	30	.986			
			.930		
141 - —	65	.904			

Results

In the prison group there is definitely more difference between the means of the sub-groups than could be expected from random sampling from the same population. There is less than one chance in a hundred that the means of the sub-groups could vary as much as these vary were they drawn by random sampling.

In the Dix Hill group the sub-group means do not differ more than might be expected. However, by forming one group below 130 and another group above 130, means of 1.093 and .892 are obtained which do differ significantly. This division is virtually a separation of hypertension cases from normal and hypotension cases. With such a grouping very similar results in means are found in the prison, Dix Hill and total groups.

In the prison group it will be noted that two-thirds of the original observations will, on the average, lie within the range of plus or minus .427 above or below the mean of sub-groups, while half lie within the probable error range of plus or minus .288. Similarly, of the entire study two-thirds lie within the range of plus or minus .441 and half lie within the range of plus or minus .297.

In these studies the results have been tabulated by groups. Obviously, the personal equation is so pronounced that studies of individuals would be confusing. There are many factors other than sulfocyanate concentration in the blood that influence blood pressure levels. Chart 1 shows the results of the studies of prisoners and chart 2 shows the curve of the mental patients. Chart 3 shows a comparison of the spread of actual determinations with the curves of averages as plotted for the group in chart 1. In the prison group the average blood sulfocyanate level for prisoners with low pressure was 1.424 mg. per 100 cc. of blood (table 2); for the normal pressure group it was 1.238 mg. per 100 cc. of blood; for the border-line group it was 1.071 mg. per 100 cc. of blood, and for the high pressure group it was 0.905 mg. per 100 cc. of blood. In the mental patients the low pressure group showed 1.048 mg. per 100 cc. of blood; for the normal pressure group it was 1.106 mg. per 100 cc. of blood; for the border-line group it was 0.858 mg. per 100 cc. of blood, and for the high pressure group it was 0.904 mg. per 100 cc. of blood.

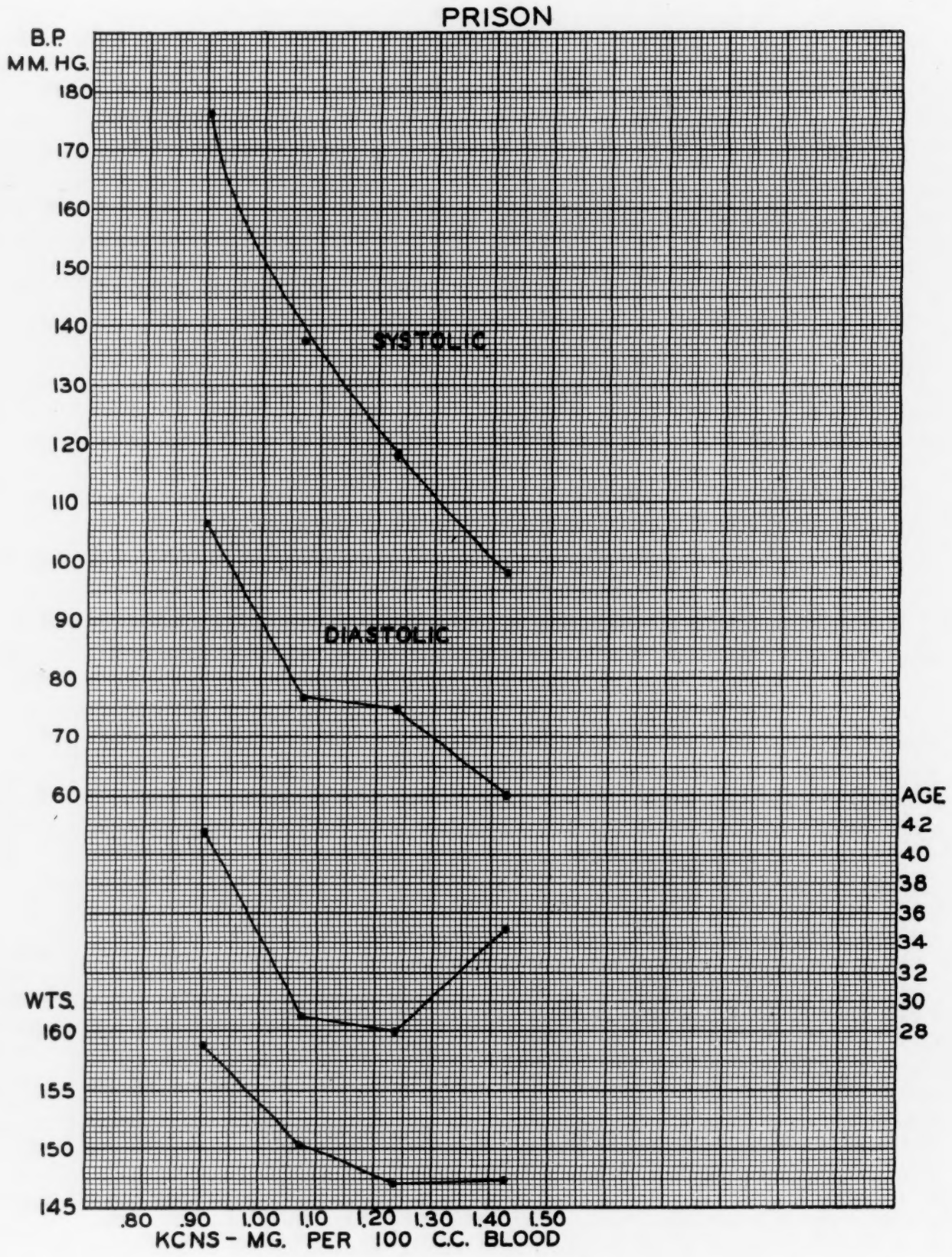

Chart 1. Results of the studies of prisoners at the State Prison.

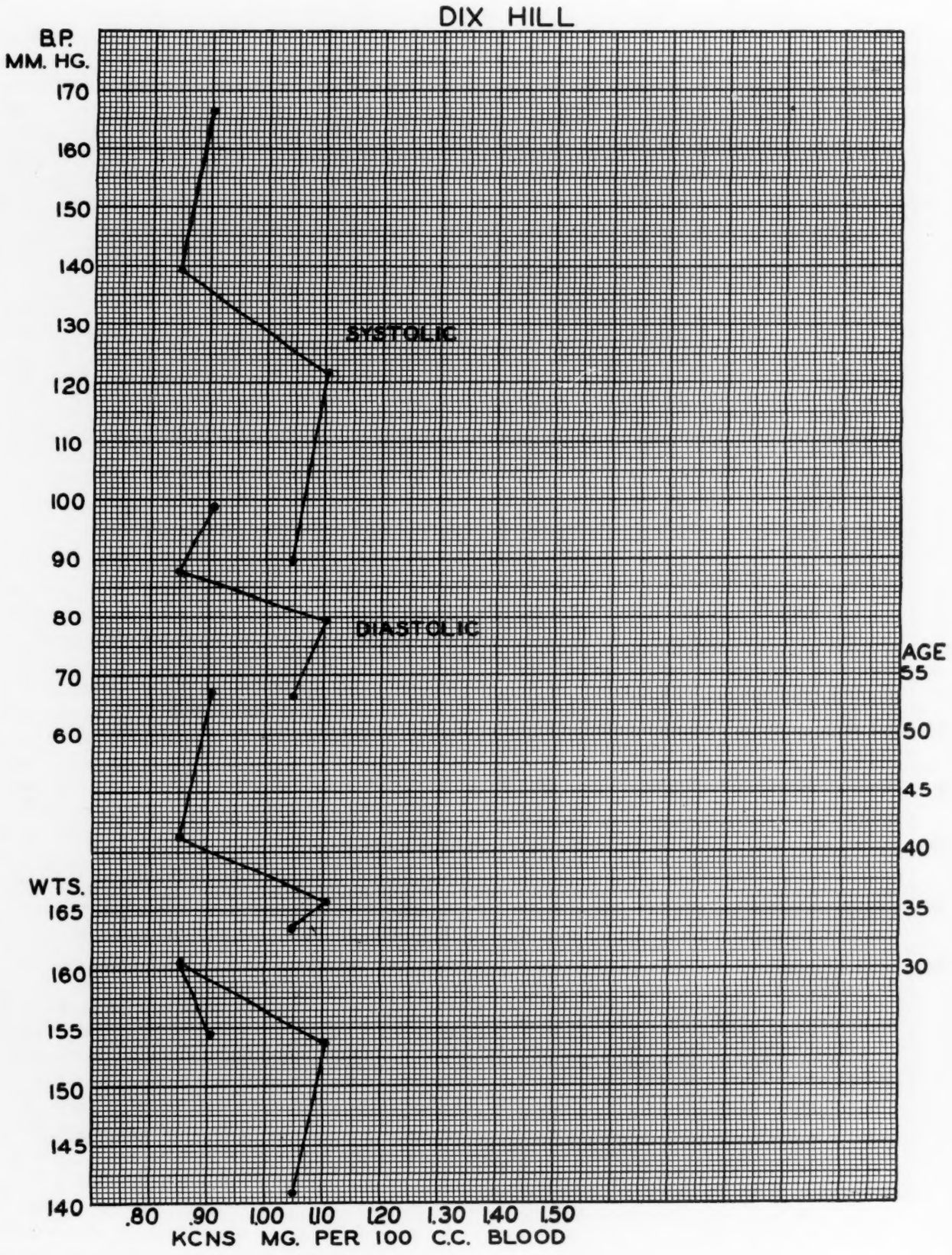

Chart 2. Results of the studies of patients at Dix Hill.

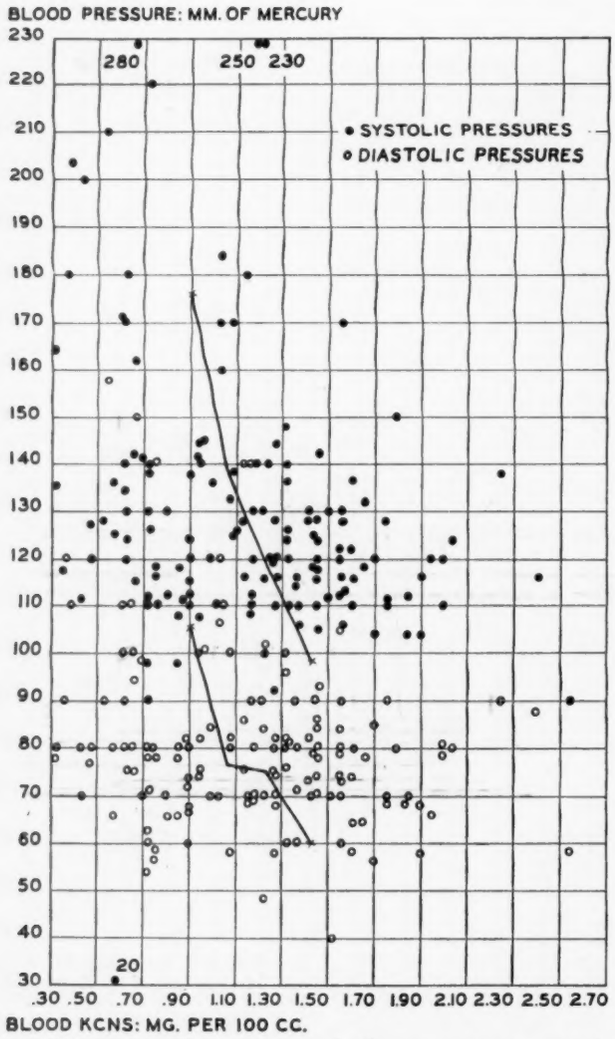

Chart 3. Comparison of the spread of actual determinations with the curves of averages as plotted for the prison group in Chart 1.

It will be noted that the normal and hypertension groups show practically identical results in the two institutions (table 3). This fact is true in spite of the wide differences in diet, physique, and the general physical activities of the inmates of the two institutions. The discrepancy in the hypotension groups may be due to the physical condition of the mental patients. At the prison, the ages of the hypotension group ranged from 22 to 60. Physically, these prisoners did not appear to differ from members of the other groups. At the State Hospital, the ages of the hypotension group ranged from 18 to 42, but the average age was greater than in the hypotension group at the prison. The hypotension group of mental patients consisted of patients who were debilitated; several were dehydrated. Several deaths occurred shortly after specimens were collected.

The State Hospital group shows plainly that hypertension is associated with a lower blood sulfocyanate concentration than is normal pressure or hypotension. The curve is somewhat more irregular than the curve of the larger group of more normal individuals studied at the prison. From these results, it appears probable that studies of larger groups should tend to straighten the curve.

The definite similarity between systolic and diastolic pressure curves, weight curves, and age curves for the four groups in each institution is noteworthy.

The table of results of repeated tests of individuals is very interesting (table 1). It shows an average variation of 0.14 mg. per 100 cc. of blood from week to week for various unselected individuals. This is within ordinarily accepted limits of experimental error and compares closely with the relatively fixed readings of patients on treatment with a constant dose of sulfocyanate.

Discussion

From these studies, it is learned that sulfocyanates are naturally present in the blood stream in a concentration of 0.31 mg. to 2.55 mg. per 100 cc. of blood (expressed as amounts of potassium sulfocyanate). The term "naturally present" is used because the normal amount is not known. However, if the normal blood pressure figures of 106 to 130 used in this study be accepted, the average of normal blood potassium sulfocyanate levels would be 1.20 mg. per 100 cc. of blood. The actual figures of normal blood pressure are not important for this study, since slightly raising or lowering the accepted limits would have little effect on the average figure of 1.20 mg. per 100 cc. of blood as given above.

In the blood, nitrites are present in the proportion of one part in five billion[5]. Nitrites are products of protein metabolism in the body. They have been used extensively for the control of hypertension, but the action is fleeting. Headaches are frequently caused or intensified by the use of nitrites. As a result, the use of nitrites is of questionable value except in emergencies.

Sulfocyanates are present naturally in much higher concentration in the body. Their therapeutic use makes patients more comfortable, reduces systolic and diastolic pressure in almost all cases, and often relieves headaches and dizziness due to hyper-

5. Krantz, Carre, and Foreman: Alkyl Nitrites, J. Pharmacol. and Exper. Therap. 64:309 (November) 1938.

TABLE 3

Average of the results from Prison and Dix Hill patients

Group	No. of Patients	mg.KCNS/ 100 mil. Serum	Blood Pressure		Age	Weight lbs.	Height inches
			Systolic	Diastolic			
Prison							
Hypotension	9	1.424	97.8	60.0	34.9	147.7	67.6
Normal	91	1.238	118.0	74.8	28.0	147.0	67.4
Border-line	19	1.071*	137.4	76.3*	29.1	150.2	67.7
Hypertension	28	0.905	176.0	106.2	41.5	158.8	67.7
Dix Hill							
Hypotension	10	1.048	89.9	66.8	33.5	140.9	67.2
Normal	34	1.106	121.8	79.6	35.7	153.7	69.0
Border-line	12	0.858	139.4	88.2	41.2	160.5	69.2*
Hypertension	38	0.904	166.7	99.1	54.3	154.5†	67.5†

*—Average using one less number of patients.
†—Average using two less number of patients.

tension. The action is constant and stable and there is no tendency to produce a tolerance to the drug[1a & b].

A consideration of investigative work done on blood pressure control by various workers suggests that the problem is complex and that no substance or group of substances is responsible for human blood pressure control. Our work has led us to the conclusion that there is a delicate balance of control of human blood pressure. Normally, it is well balanced and blood pressure remains constant. In disease, it may become out of balance in either direction. On one arm of the balance may be placed some complex factor, probably some substance or substances activated by some secretion from the adrenals, forming an active and potent pressor substance which normally maintains the proper tone of the musculature of arterioles and probably of at least some capillaries. In some abnormal conditions there is an excessive effect of this pressor substance, and blood pressure tends to rise; or this substance may be deficient, with a possible resultant hypotension. On the other arm of the balance may be placed some depressor substance. In the human body nitrites are present in very minute amounts, one part in five billion, and they do exert a fleeting depressor effect when used for therapeutic purposes. But their practical value is open to question from a therapeutic standpoint. Sulfocyanates are present in the blood stream in much larger amounts, 0.31-2.55 mg. per 100 cc. of blood, and exert a much more satisfactory therapeutic effect than nitrites.

This work shows that low blood pressure is associated with a high average blood sulfocyanate concentration, that high blood pressure is associated with a low average blood sulfocyanate concentration, and that border-line and normal pressure cases occupy intermediate positions; and it suggests very strongly, even if it does not prove, that sulfocyanates are nature's depressor substances which help to stabilize the balance between hypertension and hypotension.

It is not to be inferred that the blood sulfocyanate level constitutes the whole story of blood pressure control. There is a considerable group of individuals presenting hypertension associated with a high blood sulfocyanate level. We believe that in these cases there is an over-activity of pressor substances and that a higher dose of potassium sulfocyanate may be required to raise the blood sulfocyanate level sufficiently high to swing the balance back to normal.

In our work, we have observed patients with early hypertension and a low blood sulfocyanate content who on small doses of sulfocyanate showed a rapid drop in blood pressure, symptomatic relief, and a rise in blood sulfocyanate to 2.5, 2.8, or 3.0 mg. per 100 cc. of blood. In these cases, it has not been necessary to raise the blood concentration above the natural level seen in other cases. The conclusion is that these patients are not being supplied by nature with enough sulfocyanates to furnish normal depressor action.

On the other hand, some patients with a higher natural blood sulfocyanate concentration require much larger doses of sulfocyanate, and some may not show satisfactory results from treatment. We ascribe two causes for such imperfect results:

First: An overproduction of pressor sub-

stances in the body.

Second: Fibrosis of the musculature in arterioles which prevents or limits depressor activity through inability of the muscle to relax. Late stages of this process cause failures in treatment by this method. Such cases are illustrated by old syphilitics, paralytics and other patients with advanced arteriosclerosis.

There are many factors involved in our statistics that we cannot at this time explain. We have been unable to show any correlation between sex or race and the blood sulfocyanate concentration. Age and weight appear to have some influence, though it is not so definite as the blood pressure relationship. Height does not appear to be a factor. We have not demonstrated any tobacco factor, and are of the opinion that any tobacco influence noted in the past may have been due to the tobacco smoke present in saliva. We do not believe it could have any appreciable effect on blood sulfocyanates.

Conclusions

Studies of 241 individuals who had not received treatment show:

1. That each individual has a fixed level of blood sulfocyanate which does not appear to change from week to week.
2. That natural blood concentrations of sulfocyanates range from 0.31-2.55 mg. per 100 cc. of blood.
3. That the average blood sulfocyanate level for each blood pressure group varies inversely with the blood pressure.

These findings suggest that sulfocyanates are the most important natural depressor substances in the human blood.

Emotional Factors in Hypertension. — We have paid altogether too much attention to physical measurements in hypertensive disease. While it is undeniably true that the size of the heart as determined by the x-ray, the height of the blood pressure as determined by the sphygmomanometer, the condition of the retinal vessels as determined by the ophthalmoscope, and the state of renal function as determined by the various clinicopathologic tests are all absolutely essential to the understanding of the hypertensive individual, they are only the beginning and not the end of the study. We must try to understand the total personality of the individual who has hypertension or who seems destined to develop it. It is the study of emotional factors which may provide us with the key to the successful management of the hypertensive individual.—Edward Weiss: Renal Involvement in Hypertensive-Vascular Disease, Medical Annals of the District of Columbia, 9:421, December, 1940.

VIRUS DISEASES AFFECTING THE EYE AND ADNEXA

W. Banks Anderson, M. D.

This paper is, in the main, limited to a discussion of personal experiences with patients presenting in the ocular system certain symptoms and signs. These phenomena may or may not be associated with other peculiar symptoms and signs in other systems of the body. They have, in the evolution of medical knowledge, long been identified as characteristic peculiarities of a disease group recognized hundreds of years before the isolation of the first virus. Indeed, there is even now no uniformity of opinion as regards the exact nature of the agents inciting this group of diseases.

Rivers, in the Lane Medical Lecture of 1939, has the following to say about the nature of viruses:

"Infectious diseases are caused by certain kinds of active agents or their toxins. For convenience the agents are divided into the following groups: protozoa, fungi, bacteria, spirochetes, rickettsiae, and finally the viruses. What is there about viruses that causes investigators to set them apart from the groups mentioned above? In as much as the exact nature of viruses is not known a direct and definite reply to such a question cannot be made. Indeed the virus group of diseases was well on the way to formation before much was known about the nature of the inciting agents. This grouping depended more on the nature of the infected cells than on the nature of the inciting agent. It is well known that agents of different characteristics frequently produce almost identical disease pictures. Therefore, similarities in the clinical and pathological pictures observed in the virus groups of maladies, viz., hyperplasia, hyperplasia followed by necrosis, necrobiosis, and other characteristics which set these diseases apart from other morbid processes, are best accounted for on the basis of an intimate association between the infecting agents and their host cells; i. e., an intracellular parasitism or if one prefers intracellular autocatalytic

Read before the First General Session, Medical Society of the State of North Carolina.

From the Department of Ophthalmology, Duke University Hospital.

fabrication instead of on the nature of incitants themselves."

Rivers goes on to state, "Some of the viruses may be minute highly parasitic micro-organisms, the midgets of the microbial world, capable of reproduction only within the susceptibile host cells; others may represent forms of life more or less unfamiliar to us; and others may be fabrications of their host cells aided by the processes of autocatalysis."

Whatever the nature of the infecting agent, there has been a grouping of diseases on the basis of a certain broad similarity in the pathological picture. In general virus diseases exhibit marked tissue specificity, either neurotropic or dermatotropic. The pathological picture is said to be constant. There is hyperplasia followed by necrosis, necrobiosis and inflammation. Regardless of the acuteness of the disease, the inflammatory reaction is characterized by mononuclear cells. Rivers is of the opinion that the inflammatory reaction is not the result of the invasion by the virus, but rather the reaction to the previously infected, now devitalized, cell. If the cell involved is incapable of division and multiplication the pathological picture is due to degeneration. The closest relationship exists between the infecting agent and the host cell. It is believed that all viruses are regenerated within a susceptible living cell. This explains the more or less characteristic picture of virus diseases. Intracellular changes, inclusion bodies and ballooning degenerations, resulting from the virus-host relationships, were among the first peculiarities to be noted. The smaller elementary bodies forming the larger inclusion bodies were later demonstrated, at least in fowl pox, to be the etiological agent.

On the basis of tissue specificity virus diseases affecting the eye fall into three groups:

1. Those having a neurotropic selectivity.
2. Those having a dermatotropic selectivity.
3. Those having an affinity for uveal tissue, perhaps a chromatic specificity (mesodermatropic).

Neurotropic Group

The encephalomyelitis which occurs unexpectedly in a patient satisfactorily convalescing from a recent acute febrile disease is one of the most distressing complications plaguing the life of the physician. The general symptomatology need not be elaborated here; suffice it to say that the manifestations are protean, varying with the localization and intensity of the infection. Since there is no regeneration in the central nervous system, one of the chief characteristics of virus infection, that of proliferation, is missing. In contrast the process of necrosis becomes exaggerated. In encephalomyelitis the characteristic lesion is the demyelinization of the white matter. The virus has the peculiar power of causing rapid demyelinization around the blood vessels and around the walls of the ventricles. It is to be noted that this is the area of greatest damage in Devic's and Schilder's diseases. This similarity is stressed by those who hold that neuromyelitis optica (Devic) and encephalitis periaxialis diffusa (Schilder), as well as disseminated sclerosis, are due to virus infection.

Acute disseminated encephalomyelitis has been observed in association with the following diseases:

1. Variola
2. Varicella
3. Measles
4. Epidemic parotitis
5. Pertussis
6. Vaccinia
7. Antirabic inoculation

Although this classification may have no basis in fact other than the common symptomatology, it nevertheless seems permissible to group the manifestations induced or provoked by these diseases into the class known clinically as "acute disseminated encephalomyelitis of Westphal".

There are two theories of the mechanism of infection in these cases. One is that the antecedent infection weakens the normal barriers into the central nervous system, so that the virus, already present in endemic proportions, may pass through them. The other is that the virulence of the virus is increased by some alteration in its structure due to the association with the antecedent infectious agent. The eye symptoms noted as manifestations of this disease, which is at least clinically within itself an entity, are:

1. Paralysis of the cranial nerves.
2. Amaurosis followed by temporary achromatopsia.
3. Papilledema.

The optic nerve is peculiarly vulnerable in this process, the demyelinization usually taking place anteriorly to the chiasm involving

principally the maculopapular bundle. If the cord is involved in the cervical region, pupillary irregularities suggestive of or producing Horner's syndrome are in evidence. The disease has been observed in one instance after measles. In this case there was papillitis, central scotoma and diplopia associated with paralysis of the lower limbs. This patient recovered. The mortality as a complication of measles is said by Ford to be 50 per cent. The disease has been observed in one case following mumps. In this patient, a physician, the central nervous system symptoms preceded the actual swelling of the parotids. In this case there was only a transitory and questionable swelling of the nerve head; no other ocular symptoms were present. One case was observed following antirabic inoculation. This patient, a medical student, had loss of accommodation in one eye for several months following recovery.

Other viruses having an affinity for the central nervous system are those producing (1) choriomeningitis, (2) epidemic encephalitis and (3) poliomyelitis. The eye signs in choriomeningitis are said to be rare and to differ in no way from those appearing in any other meningeal irritation. One case has been observed in which the papilledema and rather rapid loss of vision necessitated decompression. The protean paralyses following encephalitis require no comment. Paralyses of the extra-ocular movements following poliomyelitis are rare, but may occur in the cerebral and cerebellar forms of the disease.

Dermatotropic Group

Lesions of the eye and adnexa in diseases either proven or presumed to be due to infection by viruses having a dermatotropic tendency may be grouped according to the type of lesion produced.

First are the lesions of skin and mucous membranes characterized by vesicular formation. The diseases producing such a picture are:

A. Herpes simplex
    1. Dendritic keratitis
    2. Keratitis punctata superficialis
    3. Keratitis disciformis
    4. Parenchymatous keratitis
B. Herpes zoster
C. Vaccinia

Second are the lesions of the skin and mucous membranes characterized by follicular formation. Diseases producing such pictures are:

A. Inclusion blennorrhea
    1. New born
    2. Adult
    3. Swimming pool conjunctivitis
    4. Acute follicular conjunctivitis of Beal
B. Trachoma
C. Parinaud's syndrome associated with a positive Frei test (ocular lymphogranuloma venereum)
D. Molluscum contagiosum

The dendritic ulcer of the cornea, which is a typical herpetic vesicle modified by the anatomical structure of the cornea, is the most typical ocular lesion of the vesicular group. Duke-Elder[1] says:

> "Herpes simplex cornea, first described by Horner in 1871 as a clinical entity, has probably many clinical manifestations. It is primarily a superficial epithelial infection characterized by the development of minute epithelial opacities and fissures which may be followed by vesiculation and necrosis, the ultimate clinical picture being that of a dendritic ulcer."

This lesion may occur spontaneously as an isolated lesion or it may be associated with herpetic lesions elsewhere. In 60 per cent of the cases there is a definite antecedent history of infection, usually upper respiratory. Fuchs and other European investigators placed great stress on the importance of malaria as an antecedent infection. In the general experience of American clinicians, malaria, no more or less than any other febrile disease, permits, by lowering bodily resistance, herpes to appear in individuals who already harbor the infection.

The clinical picture varies, but usually begins with a sharply painful eye and totally or partially anesthetic cornea. Examination with the slit lamp in the early stages reveals minute discrete superficial white dots with the tendency to localization about the terminal ends of nerve fibers, about which there is epithelial bedewing. If these dots remain discrete, the lesion is described as a superficial punctate keratitis. Epidemics have been described in which this type of lesion was the universal expression of the disease. If the small vesicles coalesce in rows or extend irregularly from the focus, fissures of

1. Duke-Elder: Textbook of Ophthalmology, St. Louis, C. V. Mosby, 1932-37, v. 2, p. 1894.

the epithelium occur which give the typical picture of the dendritic ulcer when stained with fluorescein. The process, despite the corneal anesthesia, is rather painful. It may persist for months and is, because of the lacrimation and lid spasm, quite troubling. As with the common cold there is no immunity; on the contrary, once infection has been established there is a definite tendency to recurrence. Both sexes are attacked equally before the age of 16, but males are much more susceptible in adult life. In Gunderson's series of 221 cases, of 46 which occurred before 16 years of age, 23 were in males and 23 were in females. Only one case in the series was bilateral. The tendency to recurrence is shown by the fact that the 221 patients gave a history of 466 attacks, averaging over 2 per person.

The treatment consists of the following rather drastic routine. The cornea is dried by holding the lids back with a speculum. The involved epithelium which has undergone epidermolysis (a characteristic of virus infection) is removed with a small sterile cotton applicator. Tincture of iodine is then applied to the denuded surface of Bowman's membrane, care being taken not to have the excess iodine spread over the adjacent conjunctiva. The iodine is neutralized by 4 per cent cocaine. If the lesion does not heal rapidly—and few do—, time, effort and expense are spared by doing a tarsorrhapy—i. e., causing a partial closure of the lids by temporarily suturing the scarified lid margins. The sutures may be removed in three to four days, leaving the diseased eye, in need of protection because of the loss of corneal sensation, with its physiological covering. This constant approximation of the diseased avascular cornea with the vascular palpebral conjunctiva serves to raise the temperature of the cornea and promote healing. Permanent immunity has been reported following inoculation with vaccinia. As a complication herpetic iritis may accompany the first attack, and may return without involvement of the cornea. Disciform keratitis is thought to be another and possibly a late form of the disease. When the virus of this lesion is inoculated into the rabbit's cornea, encephalitis may occur; but encephalitis following herpes simplex in man has never, according to Duke-Elder, been known to occur.

Superficially resembling herpes febrilis is the much more serious disease, herpes zoster ophthalmicus. Goodpasture has thought that possibly this virus is only a more virulent strain of the herpes simplex. It is difficult to understand why the zoster virus is primarily neurotropic, affecting the gasserian ganglion with secondary cutaneous manifestations, while simplex is primarily dermatotropic. The zoster establishes permanent immunity in 99 per cent of the cases, while simplex never establishes immunity. The close similarity between zoster and chicken pox would also seem to set it apart from simplex.

Herpes zoster usually occurs in the spring, and is most frequently associated with epidemics of chicken pox. It usually occurs in elderly persons, but cases have been reported in children. The disease is of sudden onset, with temperature reaction and severe neuralgic pain along the course of the ophthalmic division of the fifth nerve. Shortly after the pain there is a blushing of the skin supplied by this division, accompanied by a local elevation of the temperature. Later there is edema with vesiculation. Before vesiculation the condition may be mistaken for erysipelas. The vesicles are at first clear, then become cloudy and rupture, with the formation of pits which remain permanent. The process lasts for three to six weeks, during which time there is severe neuralgic pain characterized by an unusually severe burning and throbbing associated with exquisite tenderness of the skin. As a rule the pain subsides with the eruption, but it may persist for years with little decrease in intensity. The affected area is usually left with considerably diminished sensitivity, which, when associated with the continuing neuralgia, produces the distressing "anesthesia dolorosa."

Jonathan Hutchison, who in 1866 first described the condition, noted that "eye trouble is frequent if the side of the tip of the nose is involved." The distribution of the lesion varies, but the frontal branch of the ophthalmic nerve is always involved. The lacrimal and nasociliary branches frequently escape, but when they are affected ocular complications are more common. In 50 per cent of the cases of herpes zoster ocular complications occur. They are keratitis, scleritis, iridocyclitis, ocular palsies and optic neuritis. One case has been observed in which an iritis with plastic exudate and secondary glaucoma developed. Treatment may be summarized as follows:

1. Pituitrin is said to relieve pain. (In a limited personal experience this drug has been ineffective.)
2. Convalescent serum is said by Gunderson to exert a markedly beneficial effect.
3. Tarsorrhaphy.
4. Any bland ointment to skin lesions.

Accidental vaccination of the conjunctiva is rare, but does occur. In this connection it is well to remember that while scarification of the skin is necessary for inoculation, no such trauma seems necessary in the conjunctiva. One case has been observed in which the conjunctiva was accidentally inoculated by fingers contaminated with pus from the skin inoculation.

Diseases Producing Follicles

Follicles are pathognomic of no one disease. The follicle is not a disease entity. It is a tissue reaction to irritation. The essential lesion comprising the follicle is a dense localized infiltration of the subepithelial tissue by large mononuclear lymphocytes. This forms the characteristic lesion. The mononuclear lymphocytes have poorly staining nuclei and are situated in the center of the follicle. About them the peripheral area is occupied by a dark ring of small deeper staining lymphocytes. There is another large cell with irregularly shaped vacuolized cytoplasm, phagocytic in function and histolytic in nature. These are the "Korperchenzellen" of Leber. Plasma cells occur in the surrounding tissue.

Perhaps the conjunctival follicular disease of most general interest is the inclusion blennorrhea of the new born, the gonoccocus and other virulent organisms having been excluded. (This is also known as ophthalmia neonatorum.) This disease is noted in the new born three or four days or one to two weeks after birth. Attention is first called to the condition by the sero-mucoid discharge with accompanying swollen lids. When everted these lids show the formation of fine irregular follicles. When these follicles are scraped, the epithelial cells are found to contain inclusion bodies. The preauricular gland is swollen but painless. The diagnosis is made usually by exclusion, since it seems scarcely feasible to scrape the mucous membranes for diagnosis of such a benign condition. There seems to be no question but that the disease is contracted in the passage of the baby through the genital tract, and that the etiological agent is a virus. This same etiological agent, or one quite similar in immunological reaction, also attacks adults, producing the so-called swimming pool conjunctivitis. While this is not necessarily contracted in the swimming pool, several epidemics have been definitely traced to such a source. This consideration, with the seasonal incidence of the disease, justifies the continued use of the term. The disease runs a chronic course and may leave scattered fine scars, but usually heals without sequellae. Mild antiseptics may be used. Sulfanilamide may be of use, but in view of the mildness of the symptomatology it seems scarcely justified unless trachoma is suspected. Inclusion blennorrhea and swimming pool conjunctivitis have, in fact, been classified by several prominent investigators as a para or genital trachoma, standing in the same relationship to this disease as does the para group of the typhoid series to typhoid infection.

There is a chronic follicular conjunctivitis which differs somewhat in appearance and clinical course from that described above. The etiological agent is unknown, and it is mentioned here only to complete the picture. In the same category should be mentioned the acute conjunctivitis of Beal. In this latter type neither organism nor inclusion bodies have been found, but the disease is felt by most investigators to be of virus origin.

By far the most important of all the follicular diseases of the eye is trachoma. Duke-Elder introduces his chapter on trachoma with the following statements:

> "Trachoma . . . an immense subject in literature replete with hypotheses, discussions and polemics in a world pregnant with suffering, disability and blindness—is a chronic contagious disease of the conjunctiva and cornea characterized by subepithelial cellular infiltration with a follicular distribution, the natural resolution of which is cicatrization involving potentially much visual disability and gross deformity. Its importance as a source of human suffering, as a cause of blindness, and as a national economic loss over large tracts of the world's surface, is second to

none among the diseases of the eye, or indeed among diseases of all kinds."

North Carolina has been fortunate in the low incidence of this disease. (In a limited experience it would seem that in this respect our position is precarious.) There is one well-established focus. At the present time three cases of trachoma among the hosiery mill workers of Burlington are under observation. It is believed that the disease came in with the influx of skilled hosiery workers from the Philadelphia area. It is said that the disease also occurs among the Indians in Robeson and contiguous counties, and a few cases from this area have been observed. Cases are also reported among the mountaineers near the Tennessee line.

Trachoma was recognized as a clinical entity at least as far back as 2000 B. C., and there has been, until the advent of sulfanilamide, little change in the treatment handed on from antiquity—namely, copper sulfate, curettement of the follicles, and then more copper sulfate. Recently with astonishing success the United States Public Health Service has been using sulfanilamide in acute cases in the western Indian reservations. The success of this drug in the treatment of this disease definitely strengthens the arm of those who contend that trachoma is not a virus disease.

Recently Macnie[2] reported a series of cases of follicular conjunctivitis resembling Parinaud's conjunctivitis, which he stated demonstrated that: "The virus of lymphogranuloma venereum is one of the causes of the oculoglandular syndrome of Parinaud." It is possible then that this fourth venereal disease may ultimately prove of some importance in ophthalmology. Perhaps in view of his studies it may be worth while to subject any patient with follicular conjunctivitis of unknown etiology to the relatively simple Frei test.

For completeness another disease of the lids produced by a filtrable virus must be mentioned. This is the molluscum contagiosum. Occasionally actual follicular conjunctivitis occurs in this disease. The disease is self-limiting, but recovery may be aided by excision of the growth and expression of the contents of the papilloma with cauterization.

2. Macnie, J. P.: Ocular Lymphogranuloma Venereum, Arch. Ophth. 25:255 (February) 1941.

Lesions of the Eye Characterized by Proliferative Granulomatous Lesions Resembling Tubercles, But Without Central Caseation and Without Demonstrable Tubercle Bacilli, Having an Affinity For Uveal Tissue

There is an interesting and puzzling group of cases in which the uveal tract—that is to say, the pigment bearing choroid, ciliary body and iris—become involved in a granulomatous proliferative process resembling a tubercle but without the tubercle bacillus and without the central caseation said to be typical of the tubercular infection. These syndromes involve other organs and are of considerable general interest. They may be classified as follows:

1. Uveoparotid fever.
2. Sarcoid of Boeck.
3. Uveitis with alopecia, vitiligo, poliosis and dysacousia.
4. Harada's syndrome (encephalitis phenomena, dysacousia delirium, vomiting, leukoderma, poliosis, alopecia).

Uveoparotid fever is characterized by a bilateral low-grade painless inflammation of the interstitial tissue of the parotid associated with a chronic subacute bilateral uveitis. With this disease there is often an associated paralysis of the cranial nerves and other general systems. Other ocular symptoms include keratitis, optic neuritis, polyuria and dryness of the mouth. The disease is self-limiting. The lesions have a tendency towards a spontaneous resolution.

Closely akin to the uveoparotid fever is the syndrome known as Boeck's sarcoid. The pathological picture, like that of uveoparotid fever, is a benign lymphogranulomatous lesion with a tendency to spontaneous resolution, resembling the tubercle, but without central caseation. There is a low-grade temperature, enlargement of lymph glands, and bizarre chest plates. The uveal tissue of the eye may be involved. One case was observed in which the lids were so involved that leprosy was seriously considered.

It should be remembered that no claim is made that the diseases of this group are of known virus etiology. It must be remembered that they have many of the characteristics of tuberculosis, and by some are classified as para-tuberculous. That is to say, the reaction is an allergic response to a tubercle strain of low virulence in an individual of

high immunity sensitive to the protein of the organism.

Harada's syndrome is a disease of unknown etiology, but probably due to virus infection. It occurs most often in Japan, though cases have been reported in this country. The characteristics are posterior segment disease of the eye involving total separation of the retina, but with eventual restoration of function due to spontaneous reattachment. It is associated with alopecia, vitiligo, poliosis, leukoderma, dysacousia and enchephalitic phenomena. The disease is self-limiting. Two cases have been observed which presented some features of this disease. One, the son of a physician, had previous to the ocular complications developed areas of vitiligo. The other developed joint symptoms, dysacousia, vitiligo and uveitis. Both recovered spontaneously.

Conclusion

There have been presented some prominent ocular symptoms and signs which are part of the picture of definite syndromes involving other organs of the body, and which are therefore of general interest. It is not claimed that all these disease entities have been definitely proven to be due to viruses. Some, particularly the group discussed under the heading of uveitis, are by many investigators thought to be due to some form of tuberculosis. Whatever the nature of the infecting agent the field of investigation has been largely unexplored. It is hoped that, when these syndromes have been brought to mind, closer search for other evidences of systemic disease will be considered when one is confronted with an inflamed eye.

The Cost of Psychotherapy. Psychotherapy . . . . takes time and effort and must be paid for, yet when we look into the time, effort and expense that have been expended by many patients or by institutions taking care of these patients in the usual medical approach, we realize that an hour or two well spent in a discussion of the life situation of such patients would obviate a great deal of this other expense . . . . It is amazing what the total expense of a great many unnecessary studies amounts to so far as the institution is concerned, and of course the same thing is true in the case of private patients. I think the day is close at hand when we will regard some of these thick-chart patients, this poly-physical approach, with the same amusement and disdain with which we now regard the polypharmacy of a bygone age in medicine.—Edward Weiss: The Treatment of Illness of Emotional Origin by the Internist, Annals of Internal Medicine, 14:434 (September) 1940.

SEROLOGICAL SURVEY OF DRAFT REGISTRANTS

JOHN H. HAMILTON, M. D., *Director*
State Laboratory of Hygiene
RALEIGH

On the morning of October 16, 1940, in seventy-nine of North Carolina's one hundred counties, health workers or their representatives were waiting for volunteers who would submit specimens of blood in the largest syphilis survey ever attempted in North Carolina. The health workers had been provided with 100,000 specimen containers. The volunteers were young men registering under the 1940 Selective Service Act.

The days preceding this eventful date had been busy ones at the State Laboratory of Hygiene and the Division of Epidemiology. Specimen containers must be prepared and distributed; instructions and record forms must be made available. It was now up to the local health workers and the volunteers. Those of us in Raleigh had expected October 16 to be a day of watchful waiting—waiting to find out whether we secured 10,000 specimens or 75,000. However, we waited only for an hour or so before reports began to pile in that the supply of specimen containers was exhausted. In many instances special messengers were dispatched to Raleigh for additional containers.

453,729 men registered under this Selective Service Act. Specimens from 136,756 of these men were received by laboratories.

The methods used in assembling 136,000 specimen containers and the technical preparations made for testing so large a number of specimens might be of interest to another laboratory director, but probably to no one else. Plans had been made for the examination of 75,000 specimens; the budget had been set up on that basis. An 80 per cent increase over expectations necessitated sending SOS calls to other laboratories. All of the local laboratories connected with Health Departments in North Carolina responded to our call for help. The Laboratory of the State Highway Commission at Central Prison volunteered. Our greatest help from the standpoint of volume was from the Laboratory of Dr. Harry Eagle in Baltimore. Your State Laboratory of Hygiene examined approximately 92,000 specimens.

Read before the North Carolina Public Health Association, Pinehurst, May 19, 1941.

The personnel in our serological group was increased from ten to thirty-two. Nearly every member of our staff assisted this group in some way—many working nights, Sundays and holidays. Serum was separated from clots as rapidly as possible and sent to a freezer locker for storage until such time as the specimens could be examined. The last specimen was reported on December 18. As nearly as we could tell by observation, the stored serums were in satisfactory condition for examination.

The twenty-one counties which sent no specimens had no organized health department at the time of the registration. Only one specimen was sent from the Currituck-Dare Health District. The small Negro population in Alleghany, Avery, Burke, Caldwell, Cherokee, Clay, Graham, Haywood, Jackson, Swain, Macon, Transylvania, Wilkes and Yancey counties did not yield a sufficient number of specimens for data from these counties concerning the Negro population to be of value. Counties supplying specimens from less than 10 per cent of the draft registrants are as follow: White—Durham, Franklin, Guilford and Mecklenburg; Negro—Buncombe and Guilford. With these exceptions it would seem that in other counties we should have a fairly representative cross-section of the young men between the ages of 21 and 35 inclusive.

Specimens from the white men gave less than 0.5 per cent positive reactions in six counties; 0.5 to 1.0 in nine counties; 1.0 to 1.5 in thirty counties; 1.5 to 2 per cent in fifteen counties; 2 to 3 per cent in ten counties; 3 to 4 per cent in three counties. The specimens from white men in Gaston County gave slightly more than 10 per cent positive reactions. This was definitely out of line. Specimens sent from Gaston County by Selective Service Boards have given a little over 3 per cent positive reactions. Perhaps Dr. Rhyne has an explanation.

With the specimens from Negro men a much higher percentage of positive reactions were found. Of the counties sending in significant numbers of specimens seven counties had from 5 to 10 per cent positive reactions; seventeen had from 10 to 15 per cent positive reactions; 21 had 15 to 20 per cent positive reactions; and 17 had more than 20 per cent positive reactions.

The following news item was released

TABLE 1

Serological Survey of Draft Registrants
October 1940

Number Specimens Sent to Laboratory	136,417
Number Unsatisfactory	1,700
Number Examined	134,717
Number Giving Negative Reaction	120,743
Number Giving Doubtful Reaction	2,424
Number Giving Positive Reaction	11,550
Percentage Positive Reactions	8.57
(White Men)	
Number Specimens Sent to Laboratory	77,039
Number Unsatisfactory	890
Number Examined	76,149
Number Giving Negative Reaction	73,974
Number Giving Doubtful Reaction	712
Number Giving Positive Reaction	1,463
Percentage Positive Reactions	1.92
(Negro Men)	
Number Specimens Sent to Laboratory	57,944
Number Unsatisfactory	807
Number Examined	57,137
Number Giving Negative Reaction	45,438
Number Giving Doubtful Reaction	1,694
Number Giving Positive Reaction	10,005
Percentage Positive Reaction	17.5
(Indian Men)	
Number Specimens Sent to Laboratory	1,434
Number Unsatisfactory	3
Number Examined	1,431
Number Giving Negative Reaction	1,331
Number Giving Doubtful Reaction	18
Number Giving Positive Reaction	82
Percentage Positive Reactions	5.7

Wednesday, February 5, 1941, by the United States Public Health Service, Washington:

"More than 5,000 cases of syphilis have already been found among Selective Service candidates, Assistant Surgeon General R. A. Vonderlehr of the U. S. Public Health Service said at a Regional Conference on Social Hygiene and National Defense in St. Louis today. He presented the findings of a preliminary tabulation of 120,000 blood tests and physical examinations for syphilis performed on Selective Service candidates in 23 States during November and December, 1940.

"Rates among the States range from 7 to 114 per 1000 men examined, Dr. Vonderlehr reported. He divided the States into four groups according to the extent of the syphilis problem they presented (table 2).

" 'It will be noticed,' the Assistant Surgeon General pointed out, 'that the two groups with the highest average rates are composed of Southern States. Comparison shows that they also were among those States which had the highest syphilis rates for men drafted in the last World War.'

"Direct comparison of rates for syphilis then and now cannot be made because rou-

TABLE 2

Preliminary Returns on 120,751 Men Examined For Syphilis by Selective Service Boards November and December, 1940

(Rates per 1,000 men examined, based on positive blood tests and clinical findings)

Group I—Average Rate 7 Per 1,000

North Dakota, Minnesota, Wisconsin, Rhode Island, Nebraska, Utah

Group II—Average Rate 19 Per 1,000

Wyoming, Michigan, Colorado, New Jersey, Ohio, Montana, New York, Kansas

Group III—Average Rate 61 Per 1,000

West Virginia, Oklahoma, Maryland, Tennessee, North Carolina*, Alabama

Group IV—Average Rate 114 Per 1,000

Georgia, Louisiana, Mississippi, Florida

* Based on 133,117 Registrants.

tine serologic tests were not performed on drafted men in the 1917-19 period, but, Dr. Vonderlehr emphasized, 'we can see nevertheless that after 20 years the geographical distribution of the problem is practically the same.'

"The Public Health Service reported that several States, notably North Carolina and Alabama, provided blood tests on a voluntary basis to men who registered under the Selective Service and Training Act. The preliminary rate reported for North Carolina, for example, was 78 per 1000 men examined. Some 200,000 tests from Alabama are in the process of being tabulated.

" 'Insofar as the 5,000 infected men are rejected or deferred as unfit for immediate military service, they remain wholly a civilian problem—a problem of treatment for the health department and medical profession of the community in which they live. And they are of the age group of young men who may be employed in defense industries,' Dr. Vonderlehr concluded."

The data which we have presented are provisional. They were assembled primarily by the tally-sheet method. The United States Public Health Service will at some future date give us a more accurate and more complete statistical analysis of this material. The men actually called by Selective Service Boards will give us a much fairer sample of our population than was obtained from the volunteers participating in this survey. The fact remains, however, that specimens from 136,000 men cannot fail to supply valuable information. However, information was not the sole objective of this survey. Perhaps a considerable number of men are now being treated for syphilis as the result of the survey. You who are on the front line of our public health program can testify as to the accomplishments of the survey from the standpoint of placing patients with syphilis under treatment. If any substantial number of men have been rendered non-infectious, the valiant efforts of local health workers and members of the staff of the Board of Health will not have been in vain.

Abstract of Discussion

Dr. Carl V. Reynolds (Raleigh): Dr. Hamilton has given you a resume of the selective draft serological tests made in North Carolina. It may be of interest to this group to know that the United States Public Health Service planned to do serological tests on 1,500,000 selectees in one day. A great many of those present thought that that was an impossible procedure. That would mean that we had 143,000 precincts in the United States to man with clinics, doctors, nurses and equipment, with only 155,000 doctors in the United States. On the face of it, it was certainly not practical.

North Carolina's plan was to have about 290 of our offices organized and manned by specially qualified personnel to do the job, not in one day but in four weeks. We secured the tests of 136,000 out of the 404,000 available, and we could have gotten 300,000 if we had had the equipment.

I believe firmly that we are now beginning to show results in our campaign against syphilis for North Carolina, as gigantic as that proposition seemed to be in the beginning. We had 10,000 examinations made at the penitentiary and at other prisons throughout the state and all the cases were put under treatment. This last year we treated something over one million, four or five hundred thousand persons for syphilis. Of the inmates now coming to the penitentiary, very few who come with syphilis have not been under treatment, and a great many are coming there cured. The percentage is much lower. The percentage when we took the findings was 8.5 of the total.

Dr. Cooper this morning illustrated a far reaching effect of our syphilis program when he stated to you that formerly more than 13 per cent of prenatal cases were found to be syphilitic, and the percentage has now dropped, I believe, to 10. That is something for us to be proud of. I firmly believe that in the near future we will cut syphilis down into the class of diphtheria or typhoid fever. It simply means consistent, diligent work, with a well-defined organization to carry it through.

Dr. R. E. Rhyne (Gastonia): Mr. President, I think we need some explanation in regard to the percentage in Gaston County. Of course these specimens were taken in the Health Department, and the class that came to our Department to give the blood were of the lower strata of the county. I think that might possibly explain the high percentage in the county.

Dr. Edward Humphrey Herring (Raleigh): The fact that the incidence in young whites was less than 2 per cent was astounding to me. It demonstrates statistically that our syphilis problem is mainly among the Negro and Indian population.

Dr. J. W. Williams (Williamston): I'd like to ask Dr. Hamilton about the idea that malaria causes a positive Wassermann reaction. Have you any data to help us disprove that only Negroes have malaria?

Dr. E. R. Hardin (Lumberton): We have had

quite a number of these Wassermanns reported positive on the first test where there was no definite history, and negative on the second test, and in a great many cases on a third. I wonder if that is the experience of other men.

Dr. Hamilton: Dr. Fellows has a paper tomorrow afternoon in the Section on Public Health and Education which deals with malaria as a cause of falsely positive serological tests. It is now generally accepted that all patients with malaria have a positive serological test at some stage of the malaria, and about 15 to 20 per cent of the general run of them will give positive reactions.

RELATIONSHIP OF MALARIA TO SEROLOGIC TESTS FOR SYPHILIS

F. S. FELLOWS, M. D.,

Surgeon, U. S. Public Health Service, and Consultant, Venereal Disease Control, N. C. State Board of Health

For some time after the Wassermann test was introduced in 1907 it was considered as highly specific for syphilis. Recently medical literature has contained many articles which tend to show that other diseases and conditions may cause a positive serologic test for syphilis. Eagle[1] stated in his textbook, LABORATORY DIAGNOSIS OF SYPHILIS: "The ideas current in the early days of the Wassermann reaction persist today, perpetuated by constant reiteration in a growing literature, despite the fact that many of these ideas have been shown to be in error. One cannot reconcile the general belief that the Wassermann is a nonspecific reaction frequently encountered in nonsyphilitic persons, with the fact that in actual practice patients are regularly treated for syphilis solely on the basis of a positive serologic test, and in the absence of any clinical manifestations."

It is now generally believed that several diseases other than syphilis will give positive serologic tests—notably, infectious mononucleosis, trypanosomiasis, relapsing fever, leprosy, and malaria. The last of these diseases, malaria, is, as you all know, quite prevalent in some sections of North Carolina, and individual cases may at times present themselves to any physician in the state. This disease will not only cause false positive serologic reactions on individual tests, but it will also cause discrepancies between the different tests performed and on different specimens from the same patient submitted during the course of the illness.

In 1935 the United States Public Health Service published results of a serologic survey of laboratories of the originators of various tests in general use. The results (table 1) show false positives in malaria to range from 8.6 to 20.6 per cent, with an average of 14.4 per cent.

Many health officers and physicians have encountered the above-mentioned phenomena in their clinics or private practice and have sometimes been unable to interpret the findings. Because of these uncertainties, it was decided to make a study of the effect of malaria upon the serologic tests for syphilis from North Carolina patients as performed by the North Carolina State Laboratory of Hygiene. The study was carried out in Onslow County, because it is in the malarious section of the state, and also because, at the time of the study, there had not been a great amount of public health work done in the county directed towards the control of either syphilis or malaria. Inasmuch as syphilis is more prevalent in the Negro race, we limited our study to this group.

The securing of blood samples was carried out between August 1, 1939, and April 1, 1940. A Negro physician and nurse obtained all blood specimens and filled out the questionnaire. They resided in the county during the entire survey. A house-to-house canvass was made in order to get as many as possible of the Negroes residing in the county. In addition blood specimens were taken at schools, churches, picnics, or wherever a crowd congregated. Approximately 80 per cent of the entire Negro population was tested. The county was divided into eighteen districts in order to determine the geographic distribution of both syphilis and malaria.

Venous blood was secured for the serologic test and a finger puncture was made in order to secure a "thick smear" for the malaria examination. All serologic specimens were examined by the Kline diagnostic test. Those serums which gave positive or doubtful reactions with this test were also examined by the Eagle complement fixation test. These tests were performed by the North Carolina State Laboratory of Hygiene. Malaria smears were stained by the Giemsa tech-

Read before the Section on Public Health and Education, Medical Society of the State of North Carolina, Pinehurst, May 20, 1941.

1. Eagle, Harry: Laboratory Diagnosis of Syphilis, St. Louis, 1937, C. V. Mosby Company, p. 301.

TABLE 1

1935 SEROLOGICAL STUDY*

Results of Serologic Test for Syphilis on Blood Specimens from Presumably Nonsyphilitic Patients with Various Conditions

Percentage of Specimens Giving Positive Reactions

	Normal	*Leprosy*	*Tuberculosis*	*Malignancy*	*Fever*	*Malaria*	*Jaundice*	*Pregnancy*
Brem		44.	1.9	1.7	2.2	14.3		
Eagle	2.0	72.	1.9	1.7		12.1		
Hinton	0.7	40.	5.7	3.3	2.3	11.1		1.9
Johns	3.3	58.	5.7		4.3	11.4	2.0	3.7
Kahn		60.	1.9			11.4		
Kline		66.	1.9			14.3		
Kolmer		64.	2.0	1.6	2.2	19.4		
Kurtz	3.3	76.	7.7		2.2	16.7	3.9	1.9
Rytz and Lufkin	1.3	70.	7.5	9.7	8.9	11.1	2.0	
Rein	.7	68.	1.9			19.4	3.9	
Ruediger	.7	62.	7.5	1.6	2.2	20.6	2.0	3.8
Williams		42.	1.9	1.6		17.1		
Weiss	.7	52.				8.6		

* Supplement No. 1 to Venereal Disease Information.

nique, and examined by a skilled technician.

When the Laboratory reported positive or doubtful serologic reactions for syphilis or the presence of malaria parasites, an additional specimen was secured and the tests repeated. Intervals between tests varied generally between six and ten weeks. In some instances where there was a discrepancy in the results, as many as four specimens were taken from one person. All repeat tests included serologic tests for syphilis and search for malaria parasites. Tests were also repeated whenever hemolysis or breakage occurred.

A questionnaire was filled out for each person tested. This contained information which we believed might throw some light on the possible relationship of syphilis to malaria.

Prevalence of Malaria

In a total of 3,244 persons tested we were able to find malaria protozoa in the blood of 101—3.1 per cent. We were able to do a second, third, or fourth test in 92 of these 101 patients with malaria protozoa. The plasmodium falciparum (estivo-autumnal) was found in 93.1 per cent, and the plasmodium vivax (benign tertian) in 6.9 per cent of those infected. Parasites were found again in 38 of the 92 persons who were reexamined.

History of Malaria

In the entire group studied 33.7 per cent gave a history of having had malaria. In those persons who had had malaria 38.7 per cent of them had malaria in the year prior to our study, 23.4 per cent one to five years, and 37.9 per cent over five years previously. In this group 45.8 per cent had been treated by physicians and an equal number had treated themselves with various home remedies. It was surprising to find that only 3.7 per cent used patent medicines and 1.0 per cent purchased quinine. Three and seven-tenths per cent of the group stated that they had had no treatment. (Table 2.)

Serologic Findings

As was anticipated, many discrepancies were found in the group who had demonstrable malaria parasites in the blood (table 3). When only the first test is considered, there were 32.4 per cent false positive and an equal percentage of false doubtful reactions.

In individuals without demonstrable malaria parasites in the blood we found also an appreciable number of false serologic reactions. There were 13.0 per cent false positives and 11.8 per cent false doubtful reactions. The North Carolina State Laboratory of Hygiene has participated in the national serologic surveys, and its work is considered satisfactory. We must conclude, therefore, that many of the individuals tested in this malarious region, who did not have demonstrable parasites in the blood, did have enough reagin to cause false positive and doubtful serologic tests. There seems to be

TABLE 2

Malaria History of Population Surveyed Showing Time Period in Which Malaria Was Acquired and Type of Treatment

	Number	Per Cent
Individuals Questioned	3244	100.0
No History of Malaria	2150	66.3
History of Malaria	1094	33.7
History of Malaria in Past Year	423	38.7
History of Malaria 1-5 Years Ago	256	23.4
History of Malaria Over 5 Yrs. Ago	415	37.9
Treatment Received:		
Physicians	501	45.8
Home Treatment, Herbs, Etc.	501	45.8
Patent Medicines	40	3.7
Quinine	11	1.0
None	41	3.7

TABLE 3

Changes in Serologic Results Between First and Second Tests of Malaria and Non-malaria Patients

Individuals with Two Serologic Tests	*Without Malaria*		*With Malaria*	
	Number	*Per Cent*	*Number*	*Per Cent*
First Test Positive or Doubtful	421	100.0	37	100.0
No Change in Serology	316	75.1	13	35.1
Remained Positive	280	66.5	11	29.7
Remained Doubtful	36	8.6	2	5.4
Change in Serology	105	24.9	24	64.8
Positive to Doubtful	9	2.1	2	5.4
Positive to Negative	46	10.9	10	27.0
Doubtful to Negative	41	9.7	11	29.7
Doubtful to Positive	9	2.1	1	2.7
First Test Negative			53	100.0
No Change in Serology			51	96.2
Remained Negative			51	96.2
Change in Serology			2	3.8
Negative to Positive			1	1.9
Negative to Doubtful			1	1.9

no doubt of the value of repeat serologic tests in such an area. Examination of a thick blood smear for malaria parasites in conjunction with the serologic test seems advisable, although the absence of malaria parasites should not be considered conclusive evidence that a patient has syphilis if the blood serologic reaction is positive.

These findings are not inconsistent with findings of other investigators. Kitchen and co-workers[2] have shown that all apparently nonsyphilitic persons who are given therapeutic malaria will at some time or other have a false positive serologic reaction during the course of the malaria. They have also shown that the positive reaction may continue for as long as sixty-six days after the parasites disappear from the blood.

Effect of Malaria and History of Malaria Upon Final Serologic Classification

In order to arrive at a final serologic classification of each person, serologic findings were compared with clinical history and the previous serologic and treatment history. Each case was then classified as positive, doubtful, or negative. The findings are shown in table 4.

When these figures are condensed, it is noted that positive serologic findings were twice as frequent in persons who have had malaria as in those that have never had it. Doubtful reactions were over five times as common in cases with demonstrable malaria parasites in the blood as in those without this finding.

If all degrees of positive findings, positive and doubtful, are combined and a graph is made showing age grouping of all persons with and without a history of malaria, a rather interesting picture is presented. In persons who have not had malaria the graph follows the usual curve for the age prevalence of syphilis—high in the middle age groups and low in both younger and older ages. The curve resulting from plotting the positive and doubtful reactions in those persons who have had malaria continues to rise over practically the entire age distribution. With the present uncertainty as to just how much influence malaria may have upon serologic tests for syphilis it is rather hazardous to attempt to explain these findings. However, may it not be possible that once a person has had malaria he may retain sufficient reagin to cause false positive serologic tests for many years?

2. Kitchen, S. F.; Webb, E. L.; Kupper, W. H.: The Influence of Malaria Infections on the Wassermann and Kahn Reactions, J. A. M. A. 112:1443 (April 15) 1939.

TABLE 4

Comparison of the Serologic Results of Persons With Malaria, Persons With a History of Malaria and Persons Without Either

	SEROLOGIC RESULTS							
	Positive		*Doubtful*		*Negative*		*Total*	
	Number	*Per Cent*	*Number*	*Per Cent*	*Number*	*Per Cent*	*Number*	*Per Cent*
With Malaria	11	10.9	24	23.8	66	65.3	101	100.0
With History of Malaria	156	14.2	61	5.6	877	80.2	1094	100.0
Without Either	154	7.5	78	3.8	1817	88.7	2049	100.0
TOTAL	321	9.9	163	5.0	2760	85.1	3264	100.0

Conclusions

The results of this survey show an incidence of 9.9 per cent positive serologic tests for syphilis in a large group of North Carolina Negroes. In this same group 3.1 per cent had demonstrable malaria protozoa in their blood predominately of the estivo-autumnal type.

When malaria parasites were present in the blood, disagreement between first and second serologic tests occurred in 64.8 per cent of the cases in which the first test showed a positive or doubtful reaction. Disagreement in cases where no parasites could be found was 24.8 per cent.

The advisability of concurrently examining a thick blood smear for malaria parasites of all persons on whom a serologic test for syphilis is performed is demonstrated.

Finally, I should like to urge that no patient be diagnosed as syphilitic when the only evidence of this disease is one positive serologic test. To treat such a patient for syphilis not only is unnecessary and dangerous to the patient, but may be grounds for a malpractice suit.

Abstract of Discussion

Dr. John H. Hamilton (Director State Laboratory of Hygiene): It is refreshing to listen to a paper prepared by a public health worker burdened with administrative problems and to learn that he has found time to indulge his curiosity.

Dr. Fellows has investigated a problem. He has uncovered information concerning it. We know more now than we did before Dr. Fellows made his report about the possibilities of obtaining false positive serologic tests for syphilis in patients who are or have been infected with malaria. I wish to congratulate him and express my appreciation of the work which he has done.

Unfortunately, malaria is not the only disease which will cause falsely positive serologic tests for syphilis. In addition to the list shown in the first table of Dr. Fellows' paper, it is now generally recognized that infectious mononucleosis is probably as potent a factor as malaria in producing falsely positive serologic tests for syphilis. Bernstein, during a five year period, observed 60 cases of infectious mononucleosis. Serologic tests for syphilis were performed on 37; 6, or 16 per cent, gave positive reactions. Infectious mononucleosis occurs much more frequently than we expected. It has no seasonal nor geographical limitations. Patients presenting typical blood pictures frequently do not have enlarged glands nor detected fever. More careful study of this condition in its relation to serologic tests for syphilis is being made.

Many domestic animals give positive serologic tests for syphilis. Probably 100 per cent of cows, dogs and sheep are positive by most of our recognized tests; 75 per cent of rabbits; 90 per cent of the hogs and 60 per cent of the chickens. The reaction found in these domestic animals and in man that is not infected with syphilis is termed the biologic type of reaction, as contrasted with the syphilitic type of reaction found in persons infected with syphilis. In the biologic type of reaction the reagin titer is generally low, likely to fluctuate, and usually fades within thirty to sixty days.

Falsely positive serologic tests for syphilis constitute one of the principal worries of a laboratory worker. We naturally have a horror of contributing to the treatment of a person who does not have syphilis. We urge, therefore, that when a clinician gets a positive report on a person who has no history, sign or symptom of syphilis, he send a second specimen immediately as a check on human error—his own as well as that of the laboratory. If the second specimen is reported positive, it is desirable to wait thirty days and get a third specimen, sending portions of the blood drawn at one time to two or more laboratories. If this third specimen is reported positive, he should wait an additional thirty days and send fourth specimens to several laboratories. Biologic falsely positive reactions are likely to become negative during the sixty day interval between the second specimen and the fourth.

Research workers are busily engaged in developing and testing so-called verification procedures. We hope that some of these will eliminate falsely positive reports. In the meantime we urge that clinicians have a proper lack of confidence in reports of serologic tests.

Colonel Schwartz: I have had some opportunity to study serologic tests over a number of years, and have worked in the Philippine Islands, where we have in addition to malaria and infectious mononucleosis the disease of yaws. One of the difficult problems is that of the patient with a positive serological reaction, and a positive test for malaria also. The patient may have syphilis as well as malaria. Even after treating the malaria, we don't know how long the disease may give a positive serologic reaction.

I have one suggestion to make to those who are doing serologic tests and have the opportunity to do research work. There is an approach which is

not being used to any great extent, and that is what is generally termed the quantitative serologic test. It can be done rather simply. Anyone who takes the trouble in the laboratory to do quantitative tests will find it a great field. The quantitative test is a titration of the serum for the amount of reaction or of the substance which causes the test to become positive.

Dr. Robert B. Lawson (Chapel Hill): The same problem of falsely positive reactions comes up in the diagnosis of congenital syphilis. Doing titrated Wassermanns will prevent the false diagnosis of syphilis in an infant.

Dr. Green: How long should you wait before making a test for congenital syphilis?

Dr. Lawson: In the absence of the stigma of congenital syphilis, one can wait for as long as two to three months. The routine is ordinarily to make a Wassermann test before the baby is discharged from the hospital, another at one month, another at six weeks, and another at eight months.

Dr. Fleming: I don't think we should go too far and get the idea that the serologic test for syphilis is no good whatsoever. I don't believe that the tremendously higher percentage of positive serologic tests in Negroes is due to biological false positive, although that is a problem and has to be taken into consideration in diagnosis. It has been shown that the percentage of serologic tests varies with different economic levels in the Negro race just as it does with the white race. I think Dr. Fellows' work emphasizes again the need for clinical corroboration of laboratory evidence. Dr. Eagle has run a series in which blood tests were done on 40,000 college students. From that series it seems very clear that the incidence of these so-called biological false positives was not greater than one in four thousand. Of course, in malaria districts the incidence would be higher than that.

The Detection of Syphilis.—In the detection of syphilis a negative serologic test does not preclude a positive diagnosis. From 20 to 30 per cent of patients with syphilitic aortitis or its complications have a negative serologic reaction. The diagnosis in these individuals must rest entirely on the history and physical examination. A history of syphilis or the description of an illness consistent with it must be sought by detailed direct questioning. The disclosure on physical examination of stigmas involving other organs raises a strong presumption in favor of the diagnosis.—Herrman L. Blumgart, M.D.: The Detection and Treatment of Cardiovascular Syphilis, New England J. Med. 223:444 (September 19) 1940.

Cardiovascular Syphilis.—By the time the diagnosis of cardiovascular syphilis can be based on frank clinical evidence, serious and often irreparable damage has already occurred. Any conspicuous reduction in the incidence of the disease depends primarily on the detection and adequate treatment of early syphilis in general, for cardiovascular syphilis occurs in less than 1 per cent of cases adequately treated early in the course of the disease. Thus in practically every case the clinical diagnosis of cardiovascular syphilis is evidence of previous neglect.—Herrman L. Blumgart, M.D.: The Detection and Treatment of Cardiovascular Syphilis, New England J. Med. 223:444 (September 19) 1940.

SALIVARY CALCULI

A Method of Removing Calculi From the Submaxillary Gland

Report of Two Cases

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FAYETTEVILLE

Salivary calculi are formed of salts precipitated from the saliva. The nucleus of a calculus may be an epithelial cell, a clump of pus cells, or bacteria. Their composition —calcium and magnesium phosphate and calcium carbonate—is identical with the composition of tartar that forms on the teeth. They are more or less oblong in shape, and their surfaces are rarely smooth but usually uneven and jagged. A small calculus, no larger than a grain of sand, may cause symptoms when lodged in one of the small branches that go to form the main drainage duct, or when caught temporarily in the constricted outlet of the main duct where it emerges through the mucous membrane of the mouth. Calculi occur most frequently in middle aged males, rarely in children. The gland most frequently involved is the submaxillary; and, for no reason known or suspected, the right submaxillary is more frequently involved than the left. Next in frequency of involvement is the parotid gland. The sublingual gland is rarely involved.

A brief word as to the anatomy and position of the salivary glands and the density of their secretions may help to explain the order of their involvement. The parotid, the largest, weighs from half an ounce to an ounce. Stenson's duct, which drains it with the help of gravity, is about two and a half inches long. The saliva secreted by the parotid gland is less dense and less viscid than that secreted by the submaxillary. The submaxillary gland, about a third the size of the parotid, drains through Wharton's duct, which is about two inches long. This duct, passing forward and upward, opens by a narrow orifice on the summit of a papilla at the side of the frenum linguae. The lumen of this duct, about half that of Stenson's duct, with its narrow orifice emitting a dense viscid saliva traveling upward against gravity, probably explains the more

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frequent formation of calculi in the submaxillary gland. The sublingual gland, smallest of the three and about half the size of the submaxillary, is located just beneath the mucous membrane at the forward portion of the floor of the mouth. It drains through eight to twenty short ducts of Rivinus, most of which open through the elevated crest of the plica sublingualis, the remainder joining to form Bartholin's duct, which in turn joins the submaxillary or Wharton's duct, just before its exit. A calculus derived from the sublingual gland, passing through Bartholin's duct and lodging in the narrow common exit of Bartholin's and Wharton's ducts, might be ascribed to the submaxillary gland, thereby increasing erroneously the reputed incidence of calculi of submaxillary origin.

Calculi may form in the main ducts as well as in the glands. When they are of a size sufficient to interfere with drainage, symptoms occur. In the beginning the symptoms are vague and indefinite. There may be a sensation of fullness and swelling about the involved gland while the patient is eating. Often there is a sharp shooting or stinging pain that lasts but a moment and disappears. Pain while eating is the most frequent symptom, whether the obstruction is partial or complete. If it is complete, the pain is severe, being caused by tension from retained saliva which cannot pass through the obstructed duct. Severity of the pain is in proportion to the swelling. Occasionally a small calculus may cause no symptoms until it becomes lodged in exit through the narrow outlet of the duct, and scratches the patient's tongue. By pressing the gland gently and milking the duct, in a suspected case, a grayish mucoid material may be obtained. If there has been a recent attack of pain and swelling the material may be blood tinged. If infection has occurred flakes of pus are seen. The infecting organisms are usually streptococci, pneumococci, staphylococci, and occasionally spirochetes. Pain is more constant when there is infection. Abscess formation may result in rupture into the mouth or through the skin over the gland, with discharge of the calculus. If the abscess ruptures through the skin a permanent salivary fistula may result. (I saw one of these fistulas in a patient aged 72. He prepared for a meal by wrapping a turkish towel around his neck. It was always soaked with saliva when he finished eating.)

Diagnosis

Diagnosis is usually made from the history. If the stone is in the duct and is of sufficient size, it may be felt by a finger inside the mouth. If it is located deep in the gland, detection by palpation usually is impossible. A piece of hard candy held in the mouth will often precipitate pain and swelling. The calculus may also be felt by a small probe passed into the duct. Roentgenograms should always be made, even when a stone has been felt by the finger; for there may be other stones present. Swelling from mucous cysts, thyroglossal or dermoid cysts is not easily mistaken for symptoms caused by calculi.

Treatment

Removal of a calculus that can be felt in the duct is a familiar and fairly easy procedure. If the concretion is in the gland the task is more difficult. If an external incision is made a salivary fistula may result, necessitating the removal of the gland. This is practicable in the case of the submaxillary, but results in a feeling of dry mouth. Removal of a calculus from the submaxillary gland through the mouth is practically impossible unless it is large enough to be easily palpated. Removal of the parotid gland is of course impracticable, because of the certain result of facial paralysis.

Within the last four years I have succeeded in removing a calculus from a submaxillary gland of each of two patients without internal or external incision into the glands. The textbooks I had at hand made no mention of the method employed. The method has probably been used, but, being honestly unaware of it, I felt that I had a legitimate excuse for presenting this paper. In one of the cases the calculus was small and the gland chronically abscessed. In the other the calculus was slightly larger, and no infection was present.

Report of Cases

Case 1. Miss M, aged 30, gave a history of pain and swelling about the right submaxillary gland region for about two years. The pain was more acute when sweets or pickles were taken into the mouth. The pain often extended down the neck to the right

shoulder. Swelling was always in evidence, but was more pronounced at times, extending downward into the neck.

Palpation failed to reveal evidence of a calculus in the duct, but heavy mucoid material containing pus was expressed from it. The gland was too sensitive for palpation. X-ray revealed a calculus in the right submaxillary gland. A Bowman's No. 1 tear duct probe passed into the duct failed to encounter the calculus. Eventual removal of the gland, suggested as a possible necessity, was not agreed to by the patient, who dreaded the scar. She volunteered complete cooperation in the employment of any other method than cutting. Thus began a long period of attempts to remove the calculus otherwise. An incision over the gland through the floor of the mouth (under general anesthesia) failed to reveal it, chiefly perhaps because the calculus was small and deep set, shown by roentgenogram to be below the lower border of the mandible. Weeks later dilatations of Wharton's duct were commenced. The stone could be felt by the probe about two and one-half inches from the mucous membrane orifice. Probes increasing in size were passed at intervals of three to ten days. Five day intervals furnished the best results. Once an interval of two weeks elapsed, necessitating a new beginning with a No. 1 probe. Each time a probe contacted the calculus an attempt was made to force the probe gently by it. This often succeeded, and the stone was finally dislodged and started on its way out. The outward progress through the duct, however, was slow, and often the calculus fell back into its original position. It was finally crushed by small alligator forceps, and the particles were washed out by saline introduced through a small cannula. The patient was well when seen two weeks later.

Before a probe was introduced, it was lubricated with 1-5000 bichloride of mercury ointment. Discomfort was controlled by instilling 1 or 2 cc. of 4 per cent butyn solution into the duct and waiting three minutes for anesthesia before proceeding. As the dilatations progressed pain gradually subsided, and before the stone was eventually removed the thick, pus-flaked material disappeared. The hard, sensitive mass in the submaxillary triangle had also practically disappeared.

Case 2. This case was similar to the first one, with the main exception that there was no infection in the gland. The gland involved in this case was the left submaxillary, and the patient, a married woman, was 47 years of age. Removal of the calculus was accomplished in six and a half weeks, and the patient never seemed to mind the repeated procedure. The calculus in this case was removed through the wall of the duct, after it had been moved far enough forward to be palpated by the finger in the floor of the mouth.

A PRACTICAL PLAN FOR THE REDUCTION OF INFANT AND MATERNAL MORTALITY

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DURHAM

The problem of obstetrical patients with vascular or renal derangement has been studied extensively. The notoriously high incidence of grave complications, both obstetrical and general, in this type of patient has led many internists and obstetricians to evaluate carefully not only their physiology during pregnancy, but also the advisability of further pregnancies. Most physicians at the present time, on the basis of experimental and clinical observations, feel that pregnancy superimposed on a diseased renal or vascular system is a definite added hazard to the maternal organism.

Realizing the inadequacies in the management of the hypertensive or nephritic pregnant woman, we have studied 4100 consecutive deliveries in order to obtain a group of such cases. The first series of 2000 consecutive deliveries was taken from a large obstetrical clinic employing in general the "home delivery" type of service. The second series was made up of consecutive ward deliveries in a hospital whose obstetrical patients comprise both those from its prenatal clinic and those referred from physicians in the locality—the latter generally for obstetrical complications.

Clinical or ward obstetrics provides a marked contrast to private obstetrics, not only in the type and severity of the abnormalities encountered, but also in the

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economic means for handling these abnormalities. An accurate diagnosis is usually available for the ward patient, but frequently the sociological and financial backgrounds prevent thorough rational therapy. The frequent economic inadequacy is enhanced by the general disinterest usually manifested by the ward obstetrical patient. In the so-called lower levels of society it is very difficult to obtain the patient's cooperation, not only in the field of therapeutics but, more important, in preventive medicine. Unless the disease process interferes with any of the major biologic functions, its treatment will be, despite cajolings and threats, often half-heartedly carried out by the patient.

Most women exhibit signs of permanent vascular or renal disease following repeated episodes of pre-eclampsia or eclampsia with their pregnancies. With this in mind we decided to group together for analysis patients in these series who had definite signs of permanent vascular or renal disease and patients who had been observed with two or more pre-eclamptic or eclamptic pregnancies. It must be emphasized that one previous episode of pre-eclampsia or eclampsia was not sufficient grounds for inclusion in the group. The diagnosis of hypertensive vascular disease was made only when the patient showed, both in the pregnant and non-pregnant state, a persistent hypertension (diastolic pressure above 95), with or without secondary cardiac or renal disorders. The usual diagnostic criteria—hypertension, albuminuria, alterations in the blood chemistry, etc.—during the last trimester of pregnancy and disappearing without residua following delivery, were employed when including a patient in the "repeat pre-eclampsia" group. The presence of convulsions in these cases, of course, changed the diagnosis to eclampsia. The difficulty in selecting correctly the so-called "nephritic" patient is obvious. However, if there was a previous history of kidney disease, and if albuminuria, azotemia, reduced renal function, hypertension, casts and red blood cells in the urinary sediment were found and persisted in the pregnant and non-pregnant condition, the diagnosis of acute or chronic glomerulonephritis or chronic pyelonephritis was made.

With these three groups of patients in mind—nephritic, hypertensive, and "repeat pre-eclamptic"—, we felt that a concept of a "bad risk" patient had been developed. One hundred and eighty-five such patients in the hospital group and 109 in the maternity clinic group made a total of 294 "bad risk" cases in a series of 4100 unselected consecutive ward deliveries—a percentage of 7.10. The separate and combined statistics concerning these patients in the two series are analyzed in tables 1, 2. and 3.

It was thought worth while to include in this study the number of patients returning to the hospital for the six-weeks routine check-up, at which time, on many obstetrical services, contraceptive information is given, if necessary. Every patient has been asked to return for this examination. It was also thought wise to record the number of premature babies and stillbirths. The month of gestation in which the patient was first seen by the hospital or clinic was included. This last information is of interest when hysterotomy is considered. Many obstetricians feel that the problem of early and relatively late interruption has, not only maternal and fetal, but also sociological significance.

It must be emphasized that the group of "bad risk" patients represents individuals in whom pregnancies should be and can be prevented. Although small in number, the "bad risk" group provides a large proportion of the serious maternal and infant complications. With this group eliminated, it is felt that there would be marked improvement in the maternal and fetal mortality and morbidity rates.

That this type of individual is not necessarily of the colored race can be seen by the fact that 40 per cent of the hospital group were white. The average age of 31 reveals that most of these patients can look forward to at least ten years of childbearing activity. While these patients in general are fertile, they have lost on an average of two children. Induction of labor has been necessary in a large proportion of these patients. This is one of the factors certainly accounting for the high incidence of morbidity. The necessity for hysterotomy, with its attendant complications, is apparent. Unfortunately most of these patients fail to visit a doctor until relatively late in their pregnancies. The seventh month of gestation was the average time that these patients were first seen by the hospital, although some of them had visited physicians earlier. Termination of pregnancy, which is so frequently manda-

TABLE I

Hospital Series—2100 Cases

Total number of "bad risk" patients	185
Average age of patients	32
White	75
Colored	110
Hypertensive vascular disease	131
Repeated episodes of pre-eclampsia or eclampsia	27
Acute or chronic glomerulonephritis or chronic pyelonephritis	27
Number of patients returning for postpartum examination	62
Average month of gestation when first seen at hospital	7
Average number of previous pregnancies	5
Average number of living children	3
Number of patients receiving previous contraceptive advice	21

Obstetrical complications:	*Series*	*"Bad risk" group*	*Percentage of cases in "bad risk" group*
Hemorrhage (antepartum and postpartum)	70	20	28.5
Morbidity (usual criteria—uncorrected)	380	47	12.4
Premature infants (weight below 2500 Gm.)	357	98	27.4
Maternal deaths	43	25	58.1
Stillbirths	137	62	45.3
Late and full term hysterotomies performed (not necessarily for vasculorenal complications alone)	47	28	59.0
Surgical induction deemed necessary (rupture membranes, etc.)	177	36	20.3
Medical induction deemed necessary (including pituitary extracts)	165	21	12.4

TABLE 2

Clinic Series—2000 Cases

Total number of "bad risk" patients	109
Average age of patients	32
Hypertensive vascular disease	86
Repeated episodes of pre-eclampsia or eclampsia	23
Average number of previous pregnancies	5
Average number of living children	3.8

Obstetrical complications:	*Series*	*"Bad risk" group*	*Percentage of cases in "bad risk" group*
Hemorrhage (antepartum and postpartum)	47	12	25
Premature infants	46	24	52
Maternal deaths	9	3	33
Late and full term hysterotomies performed (not necessarily for vasculorenal complications alone)	24	8	33
Stillbirths	92	18	19
Surgical induction of labor	40	23	57

TABLE 3

Both Series—4100 Cases

Total cases of:	*Series*	*"Bad risk" groups*	*Percentage of cases in "bad risk" groups*
Hemorrhage	117	32	27
Prematurity	403	122	30
Maternal deaths	59	28	47
Stillbirths	229	80	35
Late or full term hysterotomies	71	36	50
Surgical induction	217	59	27

tory in this group, is much less hazardous in the first than in the last trimester. Prematurity is the greatest danger to the infant. Recalling that the "bad risk" group makes up only 7.1 per cent of the 4100, one is struck by the contributions made to the maternal and infant complications by this vasculorenal group.

After consideration of the figures it was felt that permanent elimination of this "bad risk" group from the possibility of childbearing was highly desirable. About 10 per cent of the mothers die; about 40 per cent have premature babies; and about 30 per cent have stillborn children. The death of the mother increases child delinquency and many times throws insurmountable difficulties on the father. Furthermore, the economic burden of repeated hospitalization for these mothers and their premature children was felt excessive.

A method of eliminating pregnancies in these persons was next considered. Recently one of us (Berry) has studied the effectiveness of a relatively well thought of contraceptive technique in this type of patient, compared with a similar number of patients receiving no prevenceptive advice[1]. There was a 50 per cent failure in both groups of individuals. Failure in this type of patient was extremely grave. The irresponsible attitude of patients in this group made any contraceptive measure risky. Consideration has thus led the observers to the inescapable conclusion that only surgical sterilization was feasible, practicable and economically possible.

Early hysterotomy plus sterilization is the procedure of choice. Later in the pregnancy, when most of the patients are seen, other means must be used.

Of the "bad risk" patients who are referred back to the clinic in six weeks for postpartum examination, contraceptive advice or sterilization, only 30 per cent return. Because of the justified trend of obstetricians away from "section for sterilization", a substitute was sought. Immediate postpartum sterilization is easy, safe, effective, and economical. A review of the recent literature[2] reveals no mortality and very low morbidity in different series of these postpartum sterilizations. The easiest, safest, and most economical time for this operation to be performed is within the first twenty-four hours after delivery. The complications are fewer and the postpartum and postoperative courses run concurrently.

1. Berry, C. D.: Value of Contraception in Clinic Patient, Am. J. Ob. & Gyn. 41:1072 (June) 1941.

2. (a) Adair and Brown: Puerperal Sterilization, Am. J. Ob. & Gyn. 37:472 (March) 1939.
   (b) Hewitt and Whitley: Postpartum Sterilization, Am. J. Ob. & Gyn. 39:649 (April) 1940.
   (c) Pfuetze, R. E.: Postpartum Sterilization, Am. J. Ob. & Gyn. 41:881 (February) 1941.

Since in all types of sterilization operations failures exist, it is our opinion that the simplest procedure is the one of choice. The Pomeroy technique is very satisfactory. Ligation of a "knuckle" of tube with an absorbable suture through a one and one half inch midline incision under local anesthesia is all that is required. We feel that the saving in operative manipulation, blood loss, and time which this procedure affords far outweighs the questionable increase in "sterilization failures" it may carry. The patient can be out of the hospital in nine to ten days.

The medicolegal feature does not provide any difficulty. Most of these patients do not want more babies, and the law does not forbid sterilization when medical indications exist, providing signed permission of the husband and wife is obtained.

Summary and Conclusions

The source of many obstetrical and pediatric complications is identified and analyzed.

A plan of early hysterotomy and sterilization, or immediate postpartum sterilization, is proposed for the elimination of this source.

The plan appears to be easy, safe, economical and necessary, but does not pretend to be the only solution of the problem of removing these bad risk patients from the maternal statistics. In our hands the method has not been attended with any mortality or serious complications. We feel that the plan proposed does provide a means of attaining improved infant and maternal care.

Abstract of Discussion

Dr. George M. Cooper (Assistant State Health Officer): In my judgment the work Dr. Berry and Dr. Alter have done in this experiment is the most thorough piece of medical work I have seen in this state for several years. Their plan is sound, practical, and simple.

Dr. R. A. Ross (Durham): There are several points in Dr. Berry's paper that I think will bear emphasis. He made a very critical analysis of the material, and his conclusions are sound. I think the thing that appeals to most of us who have to deal with the lower class of patients is that the problem of sterilization should be settled before the patient is dismissed. You never know whether you are going to get them back again.

In a recent analysis of between two and three thousand postpartum sterilizations, we found less than 1.10 per cent mortality.

Drs. Berry and Alter minimized the medicolegal problem.

The Charlotte clinic has found that in all probability surgical sterilization is the best procedure. If a diagnosis of cardiovascular-renal disease is definitely established, the operation should be performed. Another pregnancy would take ten years off the life of the patient, and she is far more important as a mother than she is occupying a place in a graveyard.

Dr. A. W. Makepeace (Chapel Hill): I wish Dr. Berry and Dr. Alter had emphasized the preventive aspect a little more. I should not like to wait until a patient had had two or three attacks of eclampsia or three or four babies with hypertensive disease before suggesting sterilization. Dr. Ross emphasized the fact that each pregnancy took five or ten or fifteen years off the life of such a patient. Under those circumstances, I think it is better if you sterilize the patient early, and not wait until you hasten her death.

Dr. W. P. Richardson (Chapel Hill): My work and interest have been largely in the field of contraception, and in the analysis and discussion of our contraceptive program presented last year I pointed out that these conditions which should preclude any further pregnancies did not call for contraception, but for sterilization. I enjoyed this excellent presentation, and especially appreciated the fact that it presented a program that could be carried out while the patient is in hand. It is certainly true that if you let them get away from you, the next time you hear from them, they are pregnant again.

Dr. Alter: In closing the discussion, I would like to re-emphasize what we think is the primary significance of these figures, and that is a recognition of the source of maternal and fetal mortality and morbidity. We think that with these figures we have been able to point out where a large proportion of morbidity and mortality is arising. In the treatment of any type of disease, the first thing you have to do is to find out where the disease is. The question of handling these patients after we have labeled them is something that goes, I think, a little bit beyond the scope of this paper. Whether immediate postpartum sterilization, contraception, or sterilization of the husband is the answer, we are not in position now to say. We do feel that postpartum sterilization should have consideration by all of us and further investigation.

The Development of Organic Disease—The gradual onset of disabilities, bodily and mental, in the later years of life demands long-range studies on the possible influence of inheritance, early injuries, severe infections in childhood and youth, frustrated plans, the demands of labor and probably many other conditioning experiences. Because we each become more and more individualized as we grow older, the kind of study which is required must be correspondingly individual. Only after the collection of a vast amount of information will any reliable summary be possible.

It may be that the "general practitioner," if properly trained, would be in a more favorable position than any other type of physician to secure information useful in tracing the course of slowly developing organic disease. He would be especially well placed to obtain that information if there should be an awakening of both the public and the medical profession to the supreme value of positive, vigorous health.—Walter B. Cannon: Problems Confronting Medical Investigators, Science, 94:175 (August 22) 1941.

TREATMENT OF INFECTIONS OF THE RESPIRATORY TRACT WITH SULFONAMIDES

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and

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Infections of the respiratory tract, roughly grouped for lack of more precise etiological knowledge under the designations of coryza or influenza, constitute today the greatest unconquered menace to health and economic efficiency. It is generally accepted that such infections are due to viruses, and that, if uncomplicated by pyogenic organisms, they would not be serious in their consequences, lasting only a few days. It is these organisms which are responsible for the long list of untoward sequelae, and if their growth could be controlled, we should be successful in mitigating the severity of respiratory infections in general.

The sulfonamide drugs are known inhibitors of the growth and multiplication of many secondary invaders of the respiratory tract, and it is logical to use them in such infections. Following this reasoning 111 male students of Duke University with influenza were treated with sulfonamide drugs during the influenza epidemic of January and February, 1941. One hundred and sixteen milder cases were given the usual symptomatic treatment. The present report merely records certain observations, without attempting to draw statistical conclusions.

The average age of the students was 20.2 years. The diagnosis of influenza was based on the history and physical examination. The usual history obtained was that of a sudden onset of a chilly feeling accompanied by generalized headache, backache, myalgia, general malaise and anorexia. Within a few hours the chilly sensation disappeared and was replaced by a feverish feeling. About one-fifth of the students gave a history differing from the above in that the onset had been preceded by coryza for from two to five days, and in these cases the initial symptoms had not appeared so abruptly. The majority of the students reported to the Student Health Department within twenty-four hours after the beginning of their symptoms. The temperatures ranged from normal to 41 C. (105.8 F.), with corresponding pulse rates. The physical signs, however, were scanty, consisting merely of inflamed edematous nasal turbinates and injected pharyngeal walls.

Leukocyte counts were done on 27 per cent, and these ranged from 4,000 to 9,000, with the great majority being nearer the lower level. Nose and throat cultures revealed the usual organisms: hemolytic and non-hemolytic Staphylococcus aureus, alpha hemolytic streptococci, Micrococcus catarrhalis and Pharyngis siccus. Only 4 patients showed beta hemolytic streptococci, and in none of these cases was this the predominating organism. Routine urine examination was done on all cases and was negative, except for a trace of albumin, which was present in 94 per cent.

One hundred and six of the milder essentially afebrile cases were sent back to their dormitory rooms and kept in bed under close supervision. They were given nothing but aspirin and codeine every four hours, ephedrine nose drops, and salt, soda and borax gargles. One hundred and twenty-one cases were admitted to the hospital on the Student Health Service. Ten of these were treated in the same fashion as those sent to the dormitories and 111 received sulfathiazole, 2 Gm. immediately, and 1 Gm. every four hours until the temperature had been normal for twelve hours. In several instances larger doses were given. In six cases the staff did not feel that the response to sulfathiazole was satisfactory, and in these sulfapyridine was substituted.

Results

In the 111 cases of influenza treated with sulfonamides, the average duration of fever from the time of admission was 1.6 days, the longest five days, the shortest twelve hours. The average total dose of sulfathiazole was 13.5 Gm.; the smallest amount given was 5 Gm. and the largest 32 Gm. Blood concentrations ranged from a trace to 8 mg. per 100 cc., with an average of 3.2 mg. per 100 cc. The average stay in the hospital for this group was 3.4 days.

In the 10 patients admitted to the hospital with influenza and treated entirely symptomatically, the duration of fever was 3.1 days, the longest nine days, the shortest

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two days. The average hospital stay was five days.

It is not possible to give any very accurate data concerning the 106 patients who were diagnosed as having influenza, but who were not admitted. Judging by the rather uncertain information obtained on visits to and by the Student Health Department, the average case was not symptom-free for six days.

Toxic Reactions Due to Sulfonamides in Uncomplicated Influenza

Thirty-four per cent of the 111 patients treated with sulfathiazole complained of nausea and a sensation of "drunkenness". Only two patients, however, had severe enough symptoms to warrant stopping the drug.

One patient complained of pain in the region of the right kidney after receiving 15 Gm. of sulfathiazole; the drug was stopped and the pain disappeared forty-eight hours later. Repeated urine examinations revealed only an occasional white blood cell, and at no time were casts, red blood cells or a positive benzidine reaction in evidence. X-rays of the abdomen failed to show any renal calculi.

No patients in this group developed leukopenia, hemolytic anemia, skin rash, drug fever or erythema nodosum.

Complications in Patients Not Receiving Sulfonamides Immediately

Two students delayed reporting to the Student Health Department because they were in the midst of examinations. One came in three days after the onset of symptoms, the other four days after. They had had no treatment of any sort. Both had a fever of about 40 C. (104 F.) and signs of pulmonary consolidation; x-rays showed a patchy bronchopneumonia. One had beta hemolytic streptococci as the predominating organism in his sputum; the other showed no particular organism. Both responded quickly and satisfactorily to sulfathiazole and were discharged in seven and eight days respectively.

A 19 year old male had been followed as an out-patient for two days on symptomatic therapy. He then failed to return for two days. On the fifth day he reported with a fever of 39.5 C. (103.1 F.) and was admitted. On the following day there were fine moist rales at the left base and his white blood cell count had risen from 6,100 to 16,500, with 84 per cent polymorphonuclears and a moderate shift to the left. Sputum culture showed alpha hemolytic streptococci. He was started immediately on sulfathiazole and received 68 Gm. during the next ten days. At this time he developed erythematous tender nodules over his extremities and the drug was discontinued, the temperature then falling promptly to normal. During the last seven days of his febrile reaction his pulse rate curve was considerably below his temperature curve. It is quite possible that this fever may have represented a toxic response to the drug rather than a continued pneumonia; however, his white cell count remained elevated and the x-rays and physical signs showed little change during the entire febrile period.

An 18 year old male was ill for two days before reporting to the Student Health Service. Physical examination was essentially negative at this time. He was admitted and treated symptomatically, but on the fifth hospital day his temperature rose to 39.4 C. (103 F.) and his white cell count rose from 7,000 to 20,800, with 78 per cent polymorphonuclears and a shift to the left. X-ray showed bronchopneumonia in the right middle lobe. A pure culture of hemolytic staphylococcus aureus was grown from his sputum. He was started on sulfathiazole and received 86 Gm. in the next fifteen days. The pneumonic process cleared from the right middle lobe but spread to both lower lobes, and despite repeated sterile blood cultures, he developed a right otitis media. The ear was incised and Staphylococcus aureus was cultured from it. In view of his rather poor response to sulfathiazole, sulfapyridine was used for five days. He received 34 Gm. of this without appreciable clinical change. He also received 140,000 units of staphylococcus antitoxin. After a total dose of 120 Gm. of the sulfonamides, he developed erythema nodosum. The drug was stopped, his temperature began to fall, and within three days was normal. During the latter part of the febrile response the pulse rate curve was considerably lower than the temperature curve, and this may well represent a prolonged febrile response due to drug toxicity.

Complications in Cases Receiving Sulfonamides Immediately

There was only one instance of this. An 18 year old male was admitted to the hos-

pital suffering from influenza, with a fever of 40 C. (104 F.). He was given sulfathiazole, and received a total of 11 Gm. in two days. His temperature was normal after thirty-six hours and he was discharged on the fourth day. Six days later he developed pain in his right chest while he was at his home, where he had gone following completion of his academic examinations. Eight days from the time of his discharge he was returned to the hospital. He was acutely ill with pneumonia, the entire right lung being consolidated. The white blood cell count was 28,650, with 93 per cent polymorphonuclears and a marked shift to the left. Sputum cultures revealed a pure growth of beta hemolytic streptococci. Thirty-eight grams of sodium sulfapyridine were given during the first six days, with only slight improvement, even though the streptococcus disappeared from the sputum. He remained febrile and developed signs of pleural fluid. Thoracentesis was done at weekly intervals on five occasions, and a total of 3.300 cc. of purulent fluid was removed. Cultures of this fluid were always sterile. After the fifth tap, no more fluid formed and he made a slow but uneventful recovery.

This patient was entirely too active, taking examinations, and traveling home immediately after discharge from his initial admission, on his own initiative and against advice. It is possible that the complicating pneumonia and empyema could have been prevented by a longer convalescent period. However, he did develop a complete lobar consolidation nine days after having received 11 Gm. of sulfathiazole.

Summary and Conclusions

Two hundred and twenty-seven instances of influenza were observed among male college students. One hundred and sixteen were treated symptomatically. One hundred and eleven received sulfonamides, with an average total dose of 13.5 Gm. No serious drug reactions were encountered in this group.

The average duration of fever in the sulfonamide treated group was one-half that of the untreated group, and the period of convalescence was appreciably shortened.

One sulfonamide treated case developed pneumonia eight days after receiving the drug; two symptomatically treated cases developed pneumonia; and two completely untreated cases developed pneumonia.

No attempt is made to draw dogmatic conclusions from such a small series of patients, but the results of sulfonamide treatment were deemed encouraging and well worth further study.

The Art of the Practice of Medicine.—The difference between the science and the art of medicine is perhaps most clearly shown in the management of the patient with heart disease. Whereas one man may recognize organic heart disease and relegate his patient to invalidism and a mental state of constant fear of impending disaster, another physician, in the management of a similar condition, may be able to instill in his patient a philosophy of moderation and an opportunity to lead a happy and useful life although he is physically handicapped.

Bishop and Bennett in a recent issue of **Hygeia** state, "The outlook for longevity in heart disease is not at all gloomy when viewed from the range of cases followed over the years in a private practice in cardiology. . . . A happy life of three score years and ten—and then some—can be attained if the days of such cardiac 'risks' are marked by moderation."

As one looks back through the years it is with considerable chagrin that one recalls the bad prognosis given in a case of rheumatic heart disease or of hypertension, and today confronts those patients on the street, enjoying useful lives and affording happiness to everyone about them. Physical signs are not infallible; judgment is difficult.

As physicians we are too prone to lose sight of the fact that we are treating human beings, with minds and emotions, and not mere organisms with hearts and lungs and kidneys. To provide rest and digitalis is not enough; we must offer hope and project to the patient a way of living that is in keeping not only with his physical handicap, but one that is conducive to tranquility of mind and to the usefulness of life.

The recording of the blood pressure does not help the patient with hypertension. Hypertension does not preclude longevity. Fear and excess jeopardize the life of the patient with an elevated pressure; serenity and moderation give promise of continued usefulness and happiness. The successful management of the ill patient demands something more than the treatment of his pathologic state. The art of medicine is the treatment of the individual as a whole.—Editorial, J. Iowa State M. Soc. 31:496 (October) 1941.

Dosage in Iron Therapy.—It is of greater concern in iron therapy that adequately large doses of inorganic iron be given than that any particular form or combination be used. The more soluble iron compounds have come into favor because the effective dose is smaller. The necessity of giving infants and children relatively larger dosage per kilo has been emphasized by Meulengracht, who incidentally was one of the first to point out the fallacy, so prevalent in the first quarter of our century, of treating low hemoglobin anemia with small, supposedly stimulating doses of iron, frequently in the form of ineffective organic combinations.—Philip F. Eckman, M.D.: Indications for Use of Iron in Treatment of the Anemias, Minnesota Medicine, 23: 714 (October) 1940.

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MEDICINE AND THE CHANGING ORDER

The National Physicians' Committee has just issued a condensed report of its two years' activities. This report so vitally concerns all practicing physicians that it is reproduced in part for the benefit of the readers of the NORTH CAROLINA MEDICAL JOURNAL.

On October 14, 1939—two years ago—the first letters and literature were mailed to physicians from the offices of N. P. C. Three well-defined tasks were undertaken:

1. Clarifying the basic issues to a point of understanding for and within the profession;
2. Promoting the extension of the distribution of high quality medical care;
3. Educating the public to a point of understanding on the basic meaning of and the effective results from our system of independent medical practice.

The establishment of N. P. C., supplementing the efforts of existing medical organizations, stimulated medical journals in almost every state to the publication of articles and editorial comment on or in connection with the importance and effectiveness of our system of distribution of medical service.

As a new agency it aided in creating widespread discussion of this vital issue within county and state medical society groups. These discussions led to a clarification and understanding of the issue and toward unifying the profession. They stimulated local medical societies to undertake the providing of medical care on a co-operative or a prepayment basis. More than two hundred of these plans have been undertaken; two of them, the California Medical Service and the Michigan Medical Service, on the basis of state wide operation under medical association sponsorship.

These efforts have been vitally important. They have provided medical care for many thousands of people in lower income groups. More important, they have provided conclusive evidence of the fact that the medical profession has been and is fully aware of and alive to its grave and exclusive responsibility; namely, the providing of the highest possible medical care to all the people at the lowest possible cost. Further, and of even greater value, the experimental efforts have demonstrated that there is no panacea for the problem of medical care. The two vital factors remain,—the Doctor and the Patient.

Educational Efforts

Approximately one million letters were mailed; a series of booklets and reports were issued and distributed to a total of approximately two and one-half million copies. These included The Achilles Heel of American Medicine; the Minutemen of American Medicine; The Priceless Heritage; Statement of Post-election Position, Program and Policy; The Two Essentials for American Medicine; and New Conditions Demand New Techniques.

Two two-page advertisements in color were published in the *Saturday Evening Post.* Full page advertisements were published in nearly one hundred daily newspapers, under local medical society sponsorship.

These efforts were all concentrated on carrying through to the general public an understanding of the outstanding fundamental achievements of American Medicine, such as "The Highest Level of Health Ever Known," and the basic causes of the unusual achievements.

Evidences of the effectiveness of joint

efforts toward a common objective are being provided.

In a public address constituting a declaration on Health and Medical Policy, at Bethesda, Maryland, on October 31, 1940, Mr. Roosevelt said, in part:

> "In American life the family doctor, the general practitioner, performs a service which we rely upon and trust.
>
> "No one has a greater appreciation than I of the skill and self-sacrifice of the medical profession. And there can be no substitute for the *personal relationship between doctor and patient* which is a characteristic and a source of strength of medical practice in our land."

On July 18, 1941, Mr. Arthur J. Altmeyer, Chairman of the Social Security Board, before the House Committee investigating National Defense Migration, in part, said:

> "Some sharp clashes have centered around the proposals for health insurance. There are those who say that such proposals lead inevitably to 'socialized medicine,' a vague phrase. 'Socialized Medicine' is something to which I am opposed if that phrase means a system which destroys the *personal relationship between the patient and his doctor.*"

Is The Danger Past?

On September 24, Mr. Charles A. Togut, speaking before the National Fraternal Congress of America, warned that "state or governmental medicine will paralyze the country's fifty million voters and destroy the private practice of medicine. He said:

> "National Defense has catapulted the issue of the 'Nation's Health' onto the front page of every newspaper and onto the burning wires of every radio transmitter. As in nations ruled by the sword, malicious propagandists are piercing the heart of our incomparable system of medical care.
>
> "The Congress of the United States is weighing the destiny of our peoples and of our doctors with numerous authoritarian legislative medical measures. The battle of the century, the government versus the American Medical Association, is but a prelude to the conditioning processes of a National Planned Medical Care Program, unless the American peoples, the doctors, the industrialists, the leaders of labor and capital can smother the most powerful propaganda factory in the world and inaugurate fighting means and methods to unite the leaders of medicine and industry in a progressive Health Insurance Movement."

Today, there is greater cause for fear and a greater need for constant and intelligent vigilance than at any previous time if the independence of medicine is to be preserved.

The New Responsibility

Now, there is the opportunity and the responsibility for medicine to take the lead in acknowledging the present need, cheerfully assuming its share of the immediate task—on the basis of the emergency—but, at the same time, building the safeguards which will insure ultimately a continuation of the American Way of Life and, incidentally, the independence of the medical profession.

The Proven Method

There is but one way. Its potency has been demonstrated by American physicians —*Educational Propaganda.*

The methods and the preliminary educational efforts of the physicians have been unusually—in some respects spectacularly—effective. The methods and the media can be indicated. It is as impossible to explain the "why" of the effectiveness as it is to explain the spiritual factors which enter into the curing of disease. The elements are as subtle as those of the "doctor and patient relationship."

There can be no question but that, if 150,000 physicians fully understood the N. P. C. purpose and fully comprehended the nature and subtlety of its operation, each and every one would desire to participate in its efforts.

For almost a year—every week for more than forty weeks—there has gone forward from the office of N. P. C. an editorial to more than 12,000 newspapers with an estimated 40 million readers weekly. They are short, concise and timely. Each and every editorial has a short concluding paragraph exclusively devoted to an explanation and praise of our system of independent medical practice.

It is obvious that these editorials must be published to become factors in spreading

medical information. Thousands of newspapers—newspapers in every state—have published and are publishing this important material. (To any physician will be sent on request the newspapers in any state which are using the N. P. C. editorials.)

Finances

The policy of the National Physicians' Committee has been to carry forward effectively segments or parts of a broad program. The extent of its activities has been determined by funds available for operation.

To carry forward all phases of a carefully conceived and well defined plan of nation-wide effort will require substantial funds yearly, and for a minimum period of three years.

It is now fully understood that the carrying on of this vitally important work is the direct responsibility of the medical profession.

During the past two years, individual physicians contributed to the N. P. C. efforts to the extent of approximately $100,000. Individual local medical societies have made systematic canvasses of the membership of their societies respectively, and have provided financial support in amounts ranging from $500 to, in one instance, more than $3,000. 42.2 per cent of N. P. C. funds have come from sources other than physicians.

It has been demonstrated that:

a. The hit-or-miss method is too slow—is wasteful—and may jeopardize final results through inadequate funds.

b. This method places the responsibility solely on the shoulders of an enthusiastic minority.

c. Systematized action by an official committee of the local medical society will:

1. Produce adequate funds,
2. Spread the load uniformly,
3. Provide not only financial support but the interest and co-operation of the rank and file of physicians.

Your understanding, your interest and your support are needed and solicited.

THE BENZIDINE TEST IN THE DIAGNOSIS OF EARLY CANCER OF THE GASTRO-INTESTINAL TRACT

The belief among physicians that so-called "instruments of precision" yield evidence that is always precise frequently leads to gross diagnostic errors. The more complicated the instrument the greater is the faith inspired, so that one hears of "diagnoses" being made from the reading of electrocardiograms, or from single tests of the basal metabolic rate, or from x-ray plates. Such credulity is based upon ignorance or laziness, or both.

Excellent information may be furnished by "instruments of precision", but such evidence is only a part of the jig-saw picture, and must fit into its proper place in the clinical diagnosis easily and perfectly. A correct diagnosis fits the facts like a glove. Negative evidence must never be accepted as positive evidence; negative means nothing!

The above reflections have been inspired by a contemplation of the present state of diagnosis of cancer of the gastro-intestinal tract, one of the commonest problems facing the diagnostician, and one that is seldom solved quickly enough to save the patient's life. Forty thousand people die yearly in this country from cancer of the stomach. How many are saved by early diagnosis and prompt operation? This lamentable state of affairs is due in large part to a childish faith in "gastro-intestinal series", and to *too little faith in the patient's history and to ignoring the presence of occult blood in the stools.* The earmark of cancer is blood. Cancers bleed early, and the unequivocal presence of blood in stools, as evidenced by several properly controlled benzidine tests, *should always mean cancer until it is proved otherwise.* In the early diagnosis of cancer of the gastro-intestinal tract the benzidine test is of far greater value than x-ray studies. Both should be used, but positive blood with negative x-ray studies is compatible with early and operable cancer, whereas positive x-ray evidence of cancer all too often means a hopeless prognosis.

The benzidine test is easy to perform. E. R. Squibb and Sons manufacture a tablet,

devised by Roberts, containing benzidine and sodium perborate, which when moistened by the fluid to be tested and then touched with a drop of acetic acid yields a characteristic blue color if blood is present. Here is a cheap and easy test which, properly interpreted, is of greater value than x-rays in the diagnosis of early cancer of the gastro-intestinal tract.

* * * *

PATERNALISM WITH A VENGEANCE

On October 27, after a trial that lasted twenty weeks, a jury of Kentucky farmers decided that the leading tobacco companies of the country were guilty of a criminal combination in restraint of trade. Individual officials of the companies were also found guilty. The maximum penalty allowed by the law permits each company to be fined $5,000 and each individual to be imprisoned a year for each count. This verdict is surprising in view of the fierce competition that has existed for many years between the rival tobacco manufacturers of the country. The case, of course, will be appealed, and it is expected to go to the Supreme Court of the United States; but with seven of the nine members of this court hand-picked by the present administration, it is doubtful that this travesty on justice will be overruled.

The so-called Department of Justice of our government insisted that this case, like that of the American Medical Association, be tried as a criminal rather than a civil action, and that it be held in Kentucky, where public sentiment against the tobacco buyers is strongest, and where it is to the interest of the farmers to get the highest prices possible for their tobacco, regardless of the future of tobacco manufacture as a whole. It is hard, if not impossible, to believe that such a verdict could have been obtained in North Carolina. Virtually every independent tobacco buyer and every farmer consulted over a period of years has expressed satisfaction with the prices brought by good tobacco. Furthermore, those who know personally or by reputation such men as James Gray, Clay Williams, Will Reynolds, Jack Glenn, and Ed Darr—all North Carolina citizens—*know* that none of them would stoop to any mean or dishonorable action, still less to a criminal offense.

The trial is a logical sequel to the trial of the American Medical Association, in the program of the present administration. The lawyers for the government used the same technique—that of leading the jury to believe that the government was fighting for the oppressed and down-trodden against the tyranny of the arrogant aristocrats who conspired against them. It has been increasingly obvious that the policy of the present federal government is to exercise more and more control over industry and business as well as over the professions. The real purpose of making this a criminal trial, as David Lawrence has pointed out, "is to brow-beat American business into a new form of fascistic control whereby the Department of Justice will hereafter dictate how businesses shall be conducted. For now that an important suit has been won on the criminal side, Mr. Arnold can go forward with his scheme of official blackmail whereby American businessmen are threatened with criminal suits under the Sherman anti-trust law unless they agree in advance to consent decrees that go beyond the law itself."

It is quite clear that the present Democratic party has become the National Socialist Party of the United States. Our national leaders in Washington may be sincere in adopting the Robin Hood complex that it is their duty to rob the rich to give to the poor; but in attacking the great industries of our country, with their millions of shareholders among the widows, orphans, and small wage-earners, they are causing a score of needy individuals to suffer for every wealthy individual reached.

The evil harvest of the nine years' warfare upon industry and business is being reaped in the numerous strikes that have been crippling our defense program, culminating in the open defiance of the government by John L. Lewis. Lewis's "donation" to the Democratic campaign of a half million dollars earned by the sweat of his serfs made it embarrassing for the administration to call his arrogant bluff.

Truly, we are witnessing paternalism with a vengeance; the sort of paternalism that makes no secret of favoring one child or group of children at the expense of the other offspring.

CASE REPORTS

CLINICO-PATHOLOGICAL CONFERENCE

DUKE HOSPITAL

O. C. HANSEN-PRUSS, M. D., *and*
IVAN W. BROWN, JR., M. D.

DR. O. C. HANSEN-PRUSS (reading the clinical summary):

The patient, a 14 year old colored male, entered the hospital complaining of joint pains and difficulty in walking for two years.

Family History: Mother died of a "stroke". Her age was unknown. All siblings were living and well. There was no known familial disease.

Past History: The patient's general health had always been fair to good. At the age of 18 months he fractured the left thigh; the leg was placed in a cast and the patient recovered in a few weeks without any residual trouble. His appetite had been good until a year ago. The system review was entirely negative. The patient came from a Negro family in poor circumstances, and his diet had been inadequate in such foods as milk and protein.

Present Illness: Two years before death this boy began to complain of a dull aching pain in the knees, beginning in the left knee and later affecting the right. The pains disappeared after a short time, but the affected joints began to show a gradual deformity and the patient walked with a limp. The deformity was in the nature of a bilateral internal rotation of the knees. It gradually became more marked and walking more difficult. Two months before death similar pains were experienced in the left ankle, left elbow, and left wrist. These pains again were transitory and were unaccompanied by any swelling or redness. It was not known whether he had fever at any time. During the last year of his life he failed to gain in weight and perhaps actually lost some weight.

Physical Examination: The temperature was 99.4 F., pulse 120, respirations 20, blood pressure 130 systolic, 90 diastolic. The patient was described as a poorly developed, poorly nourished colored boy in no distress, lying comfortably in bed. The peripheral lymph nodes were not enlarged. Examination of the eyes, ears, nose, and throat showed nothing of significance. The lungs were clear to percussion and auscultation; the heart was normal in size, the rate 120 per minute. A soft systolic murmur was heard at the apex. There was no engorgement of the superficial vessels. Examination of the abdomen showed nothing abnormal. Skeletal examination showed a marked bilteral genu valgum with pronation of the feet. In walking the patient tended to sway from side to side. The upper extremities showed a slight deformity of the left wrist of the silver fork variety.

Accessory Clinical Findings: The hemoglobin was 42 per cent; there were 2,340,000 red blood cells, 6,800 white blood cells. The sedimentation rate was 30 mm. in 30 minutes. The urine examination showed a specific gravity of 1.008, no sugar, a trace of albumin, no sediment. Blood chemistry showed 10.9 mg. of calcium per 100 cc., 8.8 mg. of phosphorus per 100 cc., and 19.5 Bodansky units of phosphotase.

X-Ray Studies (Dr. George Baylin): The chest film showed the lungs to be clear and the heart normal. There was slight clubbing at the costochondral junctions. Films of the knees showed pronounced valgum deformities. The long bones were decalcified so that there was an accentuation of the trabeculae. The metaphyseal plates were extremely irregular, indicating severe disturbance in bone growth. These bone changes were typical of rickets.

Course in the Hospital: The patient was admitted to another hospital for a supracondylar osteotomy to correct the deformity of the knees. On the day of the scheduled operation the surgeon noted that the child was markedly anemic and appeared to be a poor operative risk, so the operation was postponed. Three days later the patient complained of a sudden severe pain in the abdomen, not localized. On examination the abdomen was found to be generally tender. The pain and tenderness were transitory and disappeared after a few hours. The next morning the child complained of feeling ill and refused his breakfast. Later in the morning he lapsed into coma and died at 1 p. m. on the fourth hospital day "quite unexpectedly". During the four days in the hospital his temperature ranged between 99.4 and 96 F. (by mouth).

Discussion

DR. HANSEN-PRUSS: The available data

are obviously meagre, yet certain facts stand out:

1. The age at which the disease process had its onset, namely in late infancy.
2. The chronicity of the illness.
3. The relatively rapid development of striking skeletal deformities, and their apparent symmetry.
4. The severe normochromic anemia.
5. The hypertension.
6. The high blood phosphorus in the presence of a normal value for calcium, and the large amount of phosphotase in the circulating blood.

The clinician often is forced to rely on one abnormal finding in a search for a corner stone for his diagnostic structure. In this case I believe that the primary lead is provided by the abnormally high blood phosphorus. This immediately suggests serious impairment of kidney function. An analysis of this patient's history fails to reveal any signs of a previously existing kidney disease. However, renal damage resulting from infections of the kidneys often is relatively quiescent in young children[1]. I would suggest therefore that this boy had had pyelonephritis in the past. The presence of renal disease is suggested by the hypertension in the absence of demonstrable cardiac enlargement. The subsequent events are relatively easy to explain if this presumption is accepted.

Since this patient's kidneys were unable to excrete phosphorus in proper amounts, there first occurred a decrease in serum calcium, followed later by an increase in serum calcium, because phosphorus had to be bound in some insoluble form, such as calcium phosphate, to be excreted by the gastrointestinal tract[2]. Undoubtedly a great deal of phosphorus was still retained. It has been suggested[3, 4] that this retained phosphorus acts as a stimulus to the parathyroid glands, since one of the main functions of these glands is to regulate the excretion of phosphate, especially by way of the kidneys. Thus hyperplasia of the parathyroids and a subsequent excessive secretion of parathyroid hormone results. The greater the phosphate retention, the greater is the compensatory hypersecretion of the parathyroid hormone.

Conversely, it is a well established fact that hypoparathyroidism is associated with an inability on the part of the kidneys to excrete normal amounts of phosphate. With the appearance of excessive amounts of parathyroid secretion in the circulation, the mobilization of calcium and the decalcification of bones becomes an objective feature of the disease. Moreover, it has been demonstrated experimentally that phosphorus becomes less diffusible as more calcium is available[5]. Thus the vicious cycle is established (fig. 1).

The resulting clinical picture has been called "renal rickets". Even though the roentgenological findings, as stated by Dr. Baylin, are at times "typical" of rickets, this term is an unfortunate one. The rachitic manifestations, usually quite pronounced, are only secondary features of the disease[6]. The primary difficulty is the phosphate retention. The demineralization of the skeleton in renal rickets is the result of the hyperfunction of the parathyroid glands, a compensatory mechanism to excrete the retained phosphate.

In the differential diagnosis, only one other condition can be seriously entertained —namely, a primary hyperparathyroidism. The polymorphism of the clinical picture of hyperparathyroidism has been emphasized[7]. The clinical course—particularly the relatively rapid development of skeletal deformities in this young Negro—, the hypertension, the high blood phosphorus and the roentgenological findings speak against a primary hyperparathyroidism.

It remains unknown why some nephritic children develop this rachitic chain of symptoms.

In the post mortem examination, Dr. Brown should find the following:

(1) Shrunken, diseased kidneys showing thickening of the pelvis and perhaps also of the walls of the ureters and evidence of extensive old and new injury (interstitial as well as glomerular) to the kidney parenchy-

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4. Smyth, F. S., and Goldman, L.: Renal Rickets with Metastatic Calcification of Parathyroid Dysfunction, Am. J. Dis. Childhood, 48:596 (September) 1934.
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7. Albright, F.; Aub, J. C.; Bauer, W.: Hyperparathyroidism. A Common and Polymorphic Condition as Illustrated by Seventeen Cases from One Clinic, J. A. M. A. 102:1276 (April 21) 1934.

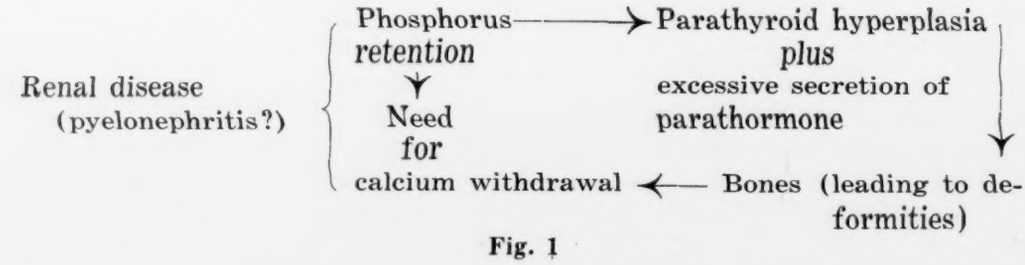

Fig. 1

ma. (2) Homogeneous enlargement and hyperplasia of all the parathyroid glands, rather than a tumor of one gland as is usual in hyperparathyroidism. (3) Decalcification of the long bones and particularly of the metaphyseal plates. (4) Early calcification in the larger arteries and varying degrees of metastatic calcinosis. The characteristic deposits[8] of calcium in the kidneys as seen in hyperparathyroidism are probably lacking. (5) Possibly atrophy of the thymus.

One can only speculate as to the immediate cause of the patient's death. He lapsed into coma and died about three hours later. It is well known that excessive amounts of calcium are toxic to the experimental animal, causing death after a variable period of coma. On the other hand, parathormone intoxication might well account for this boy's death[8].

Clinical Impression:

"Renal rickets"
Hyperparathyroidism (secondary)
Parathormone intoxication
Anemia, secondary of the normocytic type.

Pathological Discussion and Interpretation

DR. IVAN W. BROWN, JR.: This exceedingly interesting case is especially appropriate for a clinico-pathological conference. It presents the classical picture of a disease process which, in spite of its rather profound manifestations has been carefully worked out on a sound clinical, chemical, physiological and anatomical basis.

As Dr. Hansen-Pruss has suggested, this is a case of so-called renal rickets or secondary (renal) hyperparathyroidism.

The most conspicuous morphological changes are found in the kidneys, parathyroids and bones. The kidneys are markedly and diffusely damaged bilaterally by a chronic interstitial nephritic process. It is difficult to be certain whether this infection was of the ascending or descending variety. Certainly, there is no evidence of lower urinary tract obstruction now, and it should be noted that both kidneys are involved to about the same degree. The only evidence we have supporting an ascending infection is some thickening of the kidney pelvis and ureters with minimal submucosal round cell infiltration. Along with the usual areas of scarring, obliteration of glomeruli and tubules and extensive interstitial cellular infiltration, one can find rather numerous collections of crystalline material in dilated tubules surrounded by areas of acute inflammation. This latter finding is of interest in light of the high blood phosphate concentration and parathyroid hyperplasia.

The parathyroid glands are uniformly enlarged, weighing together approximately three times the normal. The increase in size is due to a hyperplasia of the chief cells or parathormone producing elements. Dr. Hansen-Pruss has already called attention to the uniform enlargement of all the parathyroids in this form of hyperparathyroidism as compared to the usual single adenoma in osteitis fibrosa cystica (Von Recklinghausen's disease).

The bones show a most remarkable change not only at the growing osteochondral junction, but also through the shaft and medullary portions. In spite of the x-ray picture, the process is quite unlike the usual vitamin D deficiency rickets of childhood, for instead of the piling up of osteoid tissue and failure of ingrowth of capillaries on the diaphyseal side, we have the formation of large, irregular masses of cartilages, separated by fibrous tissue, which have widened and now make up the entire metaphysis. No vascular changes are noted, but throughout the shaft marked decalcification and fibrous tissue replacement of trabeculae and cortical bone is noted. We should like to think of the process in the bones as decalcification of growing bone rather than a rachitic change, and for this reason, prefer the term renal hyperparathyroidism to renal rickets.

The pathogenesis of this condition is well illustrated by figure 1. With the severely

8. Hanes, F. M.: Hyperparathyroidism Due to Parathyroid Adenoma with Death from Parathyroid Adenoma, Am. J. M. Sc. 197:85 (January) 1939.

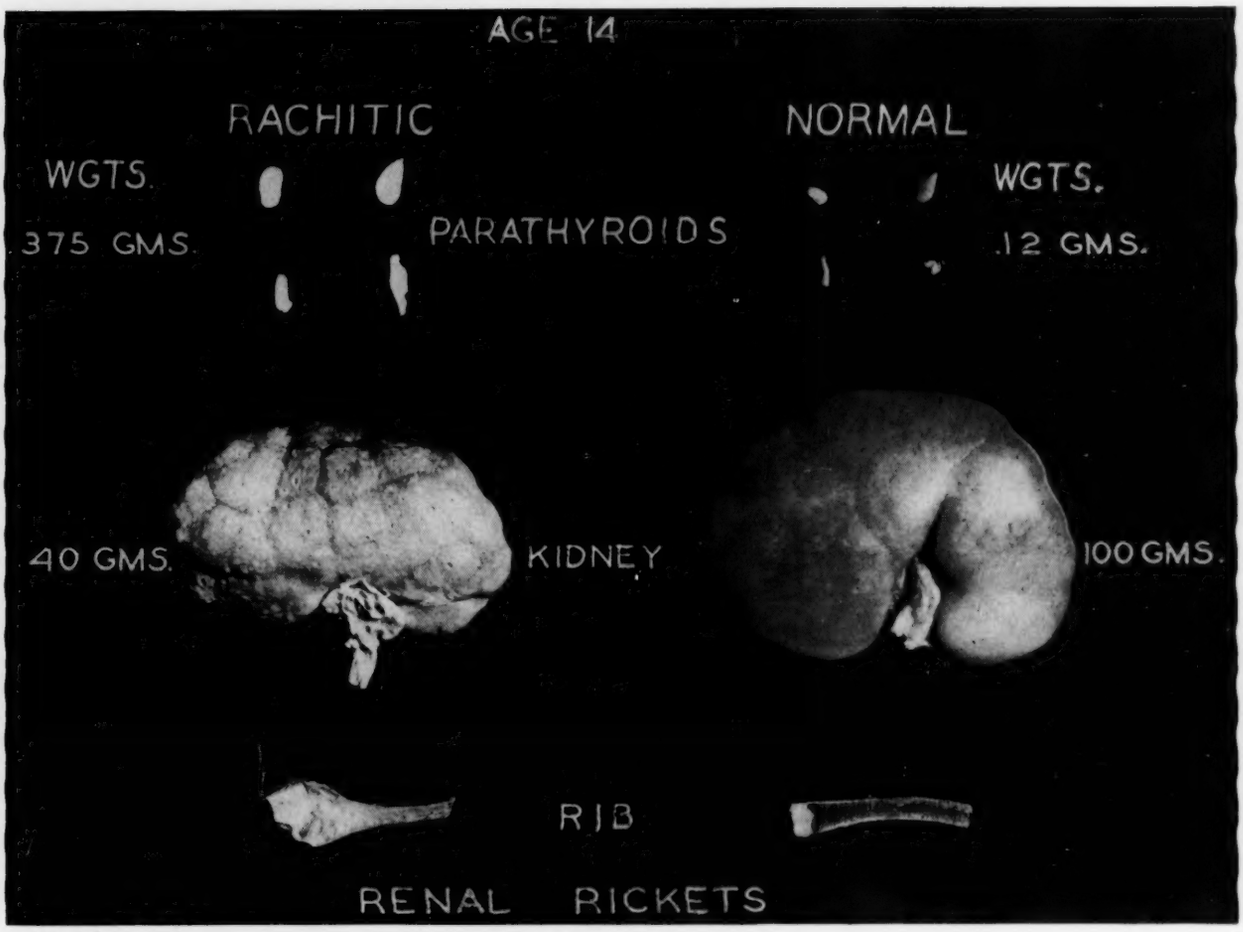

Fig. 2

damaged kidneys and reduced renal function there was a retention of phosphate in the blood which greatly disturbed the calcium-phosphate ratio. As the phosphate concentration rose the calcium level fell, not only because of the delicate balance maintained by the body between blood phosphate and calcium but also because the body in attempting to excrete phosphate through its only other mechanism, the intestine, prohibited the absorption of calcium from the intestines by the formation of insoluble calcium phosphate. There is also the possibility that more calcium than usual was excreted through the damaged kidneys. Because of the marked lowering of blood calcium and marked rise of blood phosphate, more parathormone was produced in an attempt to restore the calcium and phosphorus to their normal levels. This need for increased parathormone led to a remarkable hyperplasia of all four parathyroids.

With the lowering of the blood calcium the supply of calcium available for growing bone was decreased, and calcium was actually withdrawn from the bone by the increased parathormone in order to raise the blood calcium level.

There are no areas of metastatic calcification and no calcium can be seen in the kidneys. Furthermore, we should hardly expect to find these changes in a case of such short duration.

As to the cause of death in this child we must again point to the kidneys, for the damage to these organs is sufficient to have caused death by renal failure. However, Dr. Hansen-Pruss's suggestion of parathormone or calcium intoxication cannot be ruled out. One interesting finding in the lungs is a rather marked but patchy emphysema with ruptured and distended alveoli. There is also a moderate amount of interstitial lipoid pneumonia.

Anatomical Diagnosis: Marked chronic interstitial nephritis (pyelonephritis?), bilateral; secondary (renal) hyperparathyroidism with marked genu valgum and osteochondral deformity; marked hyperplasia of all parathyroid glands; generalized decalcification of bone, especially of long bones; emphysema with early interstitial lipoid pneumonia.

CLINICO-PATHOLOGICAL CONFERENCE

City Memorial Hospital

Winston-Salem

Presentation of Case

Mr. G. W. P., a 54 year old white male, intelligent and cooperative, was admitted to the hospital for the first time July 19, 1940, in a moderate degree of shock and complaining of extreme weakness, headache, dizziness and an increase in intensity of a substernal pain which had occurred at irregular intervals since March, 1936.

His present illness began suddenly while he was on his job as a lieutenant in the city fire department. For the two preceding years he had been told that his blood pressure had gradually risen to approximately 180 systolic and 100 diastolic, although he had experienced only occasional dizziness and substernal pain. He had been having occasional check-ups since March, 1936, at which time he was examined at the Forsyth County Sanatorium following an upper respiratory infection. On the x-ray film a definite fusiform bulge of the aorta was seen behind the heart shadow. A second examination fifteen months later showed almost identically the same findings. An electrocardiogram at about this time gave no evidence of coronary disease. He complained of some numbness of the legs and feet. His past history was otherwise negative.

The physical examination revealed a well developed and well nourished male, restlessly complaining of headache and dizziness. The blood pressure was 220 systolic and 150 diastolic. The temperature and pulse rate were normal. The head, neck and chest were normal on superficial examination. A retinoscopic examination revealed a neuroretinitis. The radial artery was firm but readily compressible. The abdomen was slightly distended. There were no palpable masses or increase in liver or spleen size.

The laboratory work showed 8,800 white cells with 58 per cent segmented cells, 9 per cent stabs, 25 per cent lymphocytes, 5 per cent monocytes and 2 per cent eosinophils. The blood Kline test was negative. The urine had a specific gravity of 1.016; no albumin or sugar was present. There were 4,000,000 red cells.

Electrocardiographic tracing revealed no significant change. A flat plate x-ray showed slight cardiac enlargement and the same fusiform bulge seen previously.

The patient was kept at absolute rest in Fowler's position with an ice cap to the head, and was put on nitrites by mouth. He was given magnesium sulfate every other morning and sedatives, and his blood pressure after three weeks dropped to 155 systolic, 110 diastolic. The headache and dizziness disappeared and he was discharged August 16, 1940. He remained out of work until November, 1940, and then was allowed to return only after he was informed what he might expect should he exert himself in any way, since his hypertensive condition resisted all medical treatment. The morning of March 17, 1941, while at stool, he experienced a sudden excruciating pain in his lower abdomen, became nauseated, vomited his breakfast, and was brought home, suffering intensely, by his fellow workers. Distention rapidly developed. During the next two days he was given enemas, prostigmin, rectal tubes, stupes, and morphine for the pain, but with no result. He was again admitted to the hospital with the diagnosis of acute intestinal obstruction possibly caused by thrombosis of a mesenteric vessel. An ileostomy was done, but the ileum was not opened because two days after operation gradual restoration of bowel movement was obtained. His blood pressure at this time was 234 systolic and 130 diastolic. Urinalysis showed 2 plus reaction for albumin. He was discharged March 30, 1941. He remained in bed at home practically all the time, getting up in a chair at few intervals. The headache, dizziness and intermittent distention continued. He was again admitted to the hospital on June 8, 1941, when it appeared that possibly another intestinal obstruction had developed. X-ray, including gastro-intestinal series and barium enema, revealed only a partial obstruction at the terminal ileum. Since some bowel movement was present no further surgical measures were attempted. At the time of discharge, three days later, his blood pressure was 240 systolic and 150 diastolic. The patient gradually grew worse and on July 6, 1941, expired, apparently in uremia.

Discussion

Dr. W. M. Johnson: This history suggests many possibilities. The main feature

is the hypertensive cardiovascular disease that gradually progressed to a fatal outcome. At the first admission the patient complained of weakness, headache, dizziness, and substernal pain. Most likely this was a vascular crisis, such as we often see in patients with hypertension. Anger, worry, and other emotional disturbances usually precipitate these conditions, although they sometimes come on without any apparent reason. There was suddenly a rise in the blood pressure. The pain might be accounted for by the enlarged aorta demonstrated by x-ray. I do not see how the patient could have been in shock with a blood pressure of 220 systolic. He remained in the hospital at bed rest for three weeks, and was given nitrites and magnesium sulfate until his blood pressure dropped to 155 systolic, 110 diastolic. We often see such a fall in blood pressure after a rest in bed, but the pressure will not stay down.

The next point of interest is that the patient was brought to the hospital with sudden excruciating pain in his abdomen. Distention then followed. The temperature and leukocyte count are not recorded here, but they would hardly help in the diagnosis. I do not think the patient had a mesenteric thrombosis, because there was no fall in blood pressure. The blood pressure was higher than it had been before, and after a few days it went still higher. An ileostomy was done, but the ileum was not opened. I imagine that after a loop of bowel was brought out through an opening in the abdomen, the distention began going down, and since there was no apparent obstruction the ileostomy wound was closed.

There are several conditions that might have caused this sudden abdominal pain. One is our old friend appendicitis, which is always with us. While it is unusual to have such an onset, I am sure that we have all seen cases which developed rapidly. Another possibility is a volvulus or possibly a tumor of some type in the intestine that made a twist. With any type of obstruction one would expect symptoms of shock to develop. With a renal calculus one would expect pain in the back, which should be confined to one side.

One likes to make his diagnosis of a case on the basis of a single underlying pathological change, if possible. There is one diagnosis that would explain the sudden abdominal pain, the sustained high blood pressure, and the fatal outcome. I think this patient had an aneurysm of the abdominal aorta, most likely a dissecting aneurysm, even though it is unusual for the patient to last so long in such cases. The aneurysm could have gotten far enough down to refer the pain to the abdomen rather than to the back. The first urinalysis showed no albumin and no sugar, but a specific gravity of 1.016, which is a little low and would fit in with the picture of nephrosclerosis. This nephrosclerosis was probably due to an interference with the circulation of the renal arteries, and could, I think, very well explain the onset of uremia.

In summary, the possibilities are: (1) hypertensive cardiovascular disease, (2) mesenteric thrombosis, (3) appendicitis, (4) volvulus, (5) renal infarction, and (6) dissecting aneurysm of the abdominal aorta. My first choice is a dissecting aneurysm of the abdominal aorta.

DR. T. T. FROST: Dr. Rodick, may we see the x-rays now?

DR. J. C. RODICK: These are the films made at Forsyth Sanatorium in 1936, when the patient was sent there with the possible diagnosis of tuberculosis. There is no evidence of tuberculosis, but Dr. Yoder has reported a bulging of the aorta which may have been a fusiform aneurysm. In 1937 he returned to the Forsyth Sanatorium for another examination, at which time the findings were the same. The shadow was still present, maybe not as distinct, but apparently unchanged. It had not increased in that length of time—fifteen months. He was here in March, 1941, with a clinical diagnosis of possible intestinal obstruction. The film shows a stepladder-like distention of the intestines and the "herring bone" appearance which might fit in with intestinal obstruction. Two days later he had a bowel movement, so the bowel was not opened. In June, 1941, he was admitted again. A barium enema showed a normal colon, with some spasm. There is air in the small bowel, which is not normal. At this time the patient had an acute abdominal distention—with gas but no obstruction. The colon was practically normal. The stomach films did not show anything wrong in the upper intestinal tract. There was a bulge in the aorta which was rather distinct and of the same size and location as seen in the Sanatorium films. A film taken six hours after the meal by mouth showed marked delay in

emptying of the small bowel. There was some hypoperistalsis lower down, but the stomach was not distended. Practically all of the meal was in the upper left quadrant when it should have been in the sigmoid and cecum. The emptying was not complete. There were two other shadows which I took to be the terminal ileum and a normal cecum. There is possibly a partial block of the ileum but no evidence of tumor. There is a little U-shaped shadow which might be the appendix. The man probably had a partial obstruction of the small intestine, possibly near the terminal ileum.

DR. W. M. JOHNSON: Is there anything to suggest a diverticulum?

DR. J. C. RODICK: No, not a thing.

DR. F. K. GARVEY: How would you explain the uremia when the patient came in with no abnormal findings in the urine?

DR. W. M. JOHNSON: I think the uremia could have been caused by interference with the circulation of the renal arteries by pressure from the dissecting aneurysm. This would cause damage to the kidneys—certainly later on in this case.

DR. E. L. GILBERT: Dr. Frost, when was this specimen of urine run?

DR. T. T. FROST: In July, 1940.

DR. E. L. GILBERT: A man with a persistent high blood pressure and a 2 plus reaction for albumin certainly must have had some damage to the kidneys.

DR. E. V. BENBOW: The x-ray of the chest showed broadening of the aortic shadow. The aorta descends from the chest to the abdomen. If the patient had had any definite abdominal condition, I do not believe the pain would have been as constant, especially after the piece of ileum was brought out. It would have been apt to move from place to place. I do not believe this man had an obstruction, although it is possible. It is my impression that he had a dissecting aneurysm of the aorta.

DR. W. M. JOHNSON: I think that the dissection had gotten far enough down to cause renal obstruction.

DR. C. H. MCCANTS: If there had been a mass, should you not have been able to palpate it?

DR. E. V. BENBOW: It seems to me that most cases of abdominal obstruction such as this usually come from the kidney, with nothing in the intestinal tract at all.

DR. P. E. ROBERSON: Who saw the man when the original pain started, and how was it described?

DR. O. E. WRIGHT: I saw him before he came into the hospital the first time. The pain was substernal and was followed by distention. He seemed to be going into shock.

DR. W. DEK. WYLIE: A dissecting aneurysm would not cause obstruction of the ileum, would it?

DR. E. V. BENBOW: It could cause a paralytic ileus, and the paralytic ileus would cause gas in the small bowel.

DR. T. T. FROST: That is what he had at the time of operation.

DR. A. DET. VALK: One loop was discolored. At the time of operation we thought the patient might have had a mesenteric thrombosis. The diagnosis was not definite enough to consider doing anything but an ileostomy, and furthermore, his condition would not warrant it.

DR. W. M. JOHNSON: Did you ever see a mesenteric thrombosis with a blood pressure as high as this?

DR. A. DET. VALK: No. On the day of operation the possibility of volvulus was considered, because there was constant substernal pain, nausea and vomiting. There was no definite diagnosis. but we thought that the man might die from obstruction unless something was done. There was no gas to be seen, no diverticulum at that time, and nothing in the appendix. We made a small stab wound and brought the ileum out in case we wanted to open it later. There was no visible distention then. The pain was paroxysmal, not the type of pain usually seen in obstruction. We did feel that there was a definite obstruction, but it proved otherwise.

Dr. Johnson's Diagnosis

Dissecting aneurysm of aorta with obstruction to renal arteries.

Anatomical Diagnosis

Old dissecting aneurysm of aorta with obstruction to renal arteries.

Arteriolar nephrosclerosis, severe.

Extension of dissecting aneurysm along mesenteric vessels.

Pleural effusion.

Pulmonary congestion and edema.

Peritoneal adhesions.

Surgical scars of abdomen.

Fig. 1. Gross photograph of thoracic portion of aorta opened from the back, showing the tear in the inner layer at the beginning of the third portion of the arch. The old channel lies within the new channel.

Fig. 2. Gross photograph of the aneurysm opened posteriorly at the level of the renal arteries, showing one renal artery partially occluded by the dissection.

DR. T. T. FROST: The ascending portion of the aorta is smooth and glistening and shows no arteriosclerotic changes. Just at the junction of the second and third portions of the aorta there is an old tear in the inner half of the media which leads into a dissecting aneurysm which extends the entire length of the aorta and into the common iliac and superior mesenteric vessels. This slit is linear and extends approximately one-third of the way around the circumference of the vessel. The margins of this slit are rounded, smooth and covered by a pale, glistening intima. The lining of the new channel is pale, smooth and glistening and covered by a smooth, glistening intima, except at one point where there is a thick, semi-organized blood clot measuring 3x5 cm. in diameter. This is yellowish and opaque and somewhat loosely attached to the wall. The new channel measures up to 5 cm. in

diameter and the old channel is considerably compressed and flattened, giving the appearance that most of the blood travelled through the new channel. The dissection involves the proximal portion of the left renal artery and extends 1 cm. along the course of the artery. This results in considerable compression of the lumen. The right renal artery has not been dissected and the blood to the right kidney comes from the original channel. The vessel is slightly reduced in circumference and the orifice is somewhat compressed. The dissection of the superior mesenteric artery extends fully half-way along its course. It shows marked compression of the original channel. Multiple sections from various portions of the aorta and the mesenteric vessels show that the new channel is lined by a moderately thick layer of adult connective tissue covered by endothelium without any evidence of inflammatory reaction of any type. The sections of the mesenteric arteries show two definite types of lesion. One is a recent dissection along the media of the large mesenteric artery which is filled with unorganized blood clot. The smaller vessel shows the end results of an old dissecting aneurysm in which the area of dissection has been completely obliterated by fibrous tissue containing small masses of blood pigment.

The right kidney weighed 105 Gm. and the left kidney weighed 85 Gm. The cortex averaged 4 mm. in width. The kidneys were essentially the same except for the difference in size. Externally they were dark red and had a uniformly finely granular surface. The cortex was uniformly narrowed. The pelvic fat was increased in amount, and the cut ends of the vessels were prominent. Sections of these kidneys show a well marked arteriolar nephrosclerosis of rather severe degree with some evidence of fairly recent acute changes in the smaller arterioles. It is evident that this man's aneurysm, as shown both by x-ray and by the microscopic sections, was present when he was first examined at the Sanatorium. His acute abdominal attacks were the result of extention of the dissection along the mesenteric arteries with great reduction in the blood supply to the small intestine. The dissection in the region of the origin of the renal arteries was of such nature as to reduce greatly the blood supply to the arteries. This had the same effect as the application of silver clamps to the renal arteries of dogs, and resulted in an arteriolar nephrosclerosis. The periods of numbness in the lower extremities were a result of interference with part of the blood supply from the aorta to the lower portion of the spinal cord. The partial intestinal obstruction found in the second x-ray examination was probably the result of adhesions which were found kinking the cecum upon itself.

MEDICOLEGAL ABSTRACT

J. F. Owen, M.D., LL.B.

Evidence. Physician not required to disclose confidential information acquired in attending a patient in a professional capacity—certain exceptions.

This is a case in which the plaintiff, a life insurance company, brought an action against the defendants, the widow and administrator of the deceased, to compel the cancellation of a life insurance policy on the life of the intestate. The plaintiff alleged that the statements and representations contained in the application were untrue, material and fradulent. The defendants denied the material allegations of the complaint and denied that the deceased, to their knowledge, made any false representations, and alleged that if any misrepresentations appeared in the policy they were immaterial and not fraudulent. When the case was heard in Superior Court a physician was introduced as a witness for the plaintiff. The testimony of this doctor, who was the family physician of the deceased, was offered for the purpose of showing that the statements and representations contained in the application for the policy in the plaintiff's company were untrue. It will be observed here that the doctor was present, ready and actually did give testimony which he apparently had gained while acting in his professional character. So far as can be determined, he did not attempt to exercise the privilege accorded physicians in Paragraph 1798 of the North Carolina Consolidated Statutes: **"Communication Between Physician and Patient.** No person, duly authorized to practice physic or surgery, shall be required to disclose any information which he may acquire in attending a patient in a professional character, and which information was necessary to enable him to prescribe for such patient as a physician, or to do any act for him as a surgeon: Provided, that the presiding judge of a Superior Court may compel such disclosures if in his opinion the same is necessary to the proper administration of justice." The defendant objected to this physician's testimony, claiming disqualification on his part to testify, but this objection was overruled by the trial judge and his testimony was allowed to stand. Exception and assignment of error were duly made. As a matter of explanation it would perhaps be well in this connection to differentiate between a privileged witness and one who is disqualified. Legally a witness who is disqualified is not allowed to testify, whereas a witness who is privileged may not be forced to testify, but may do so if he cares to.

The case was appealed to the Supreme Court and this tribunal stated that the statute of North Carolina requires that before a physician may testify to matters arising in his confidential relationship with his patients the trial judge must find that such testimony is "necessary to a proper administration of justice". It stated further that in the

absence of such finding appearing of record on appeal, it is reversible error for the trial judge upon the defendant's exception to admit testimony of the insured's physician tending to show that the insured in his application for life insurance had made misstatements of material facts which would avoid the insurer's liability in his suit to cancel the policy issued thereon. As a consequence the decision rendered was in favor of the defendants and the case was remanded for new trial. In further substantiation of this decision the Justice writing the opinion made the following remarks: "A physician should not be subpoened to court and compelled to make disclosures and open the door to the confidential relationship unless required to do so in the manner required by statute. We think this is fair to the physician and a right interpretation of the statute. This finding of record should be afforded the physician to protect him from criticism, and no doubt loss of prestige and practice if his patients object to his testifying." (Vol. 194, p. 199, North Carolina Supreme Court. Decision rendered fall term 1927).

BULLETIN BOARD

SECRETARY'S MESSAGE

What kind of Annual Meeting program would appeal to you?

We have started making preliminary plans for the 1942 Annual Meeting, which will be held next May 11, 12 and 13, at Charlotte.

It is our desire to plan the kind of meeting and present the type of program which have the greatest appeal to the greatest number of members of the Society. However, we can only guess at the desires of our members unless they will make them known. Therefore, it is suggested that each member reflect on past annual meetings which he has attended and criticize each from the standpoint of his personal likes or dislikes.

After doing this, write to your Secretary at Red Springs, setting forth the good and bad points of those meetings you have attended and offering your suggestions for the 1942 meeting.

What subjects would you like to have discussed? Who are some of the guest speakers you would like to have invited? What innovations in the set-up and program have you to suggest? Are there too many or too few section sessions; general sessions? Should there be a scientific exhibit? Do the round-table conferences appeal to you? Should there be an annual banquet? Should one session be devoted to a discussion of organization and economic, social, legislative and business questions of interest to the profession?

These are some of the questions on which we are focusing our attention. We will appreciate having your ideas and recommendations.

ROSCOE D. MCMILLAN, M.D.

NEWS NOTES FROM THE STATE BOARD OF HEALTH

Raleigh—September's 7,478 North Carolina births, as compared with 7,014 during the corresponding month last year, brought the total for the first nine months of 1941 to 64,101. This shows an increase of 3,458 over the 60,643 reported through September, 1940.

North Carolina deaths for the first nine months of 1941 totaled 24,404, which was 103 in excess of those reported for the corresponding period of 1940, and of the total for this year, through September, 3,893, or 16 per cent, were infants under a year old. During the corresponding period last year infant deaths in North Carolina totaled 3,471, giving 1941, so far, an excess of 422 over 1940.

There was a substantial decrease, however, in the number of maternal deaths—those who died in childbirth or as the result of pregnancy. Through September, this year, there had been 291 such deaths reported in the State, as compared with 351 last year, a decrease of 60. But there has been a marked increase in the number of children under two years of age dying as the result of diarrhea and enteritis. This year's reported total, so far, is 505, as compared with 375 last year, an increase of 130.

Pneumonia deaths lost ground during the first nine months of 1941, when 1,500 were reported. There were 141 more during the corresponding period of last year, when the total was 1,641.

The number of deaths from preventable accidents continues to mount. Through September, there had been 1,286 reported, against 1,038 for the corresponding period last year. Automobile fatalities, of course, lead the list.

Last year's total of diphtheria deaths during the period under consideration was 56, just 19 more than occurred this year, although this year has led, so far, in the number of cases reported, in spite of the immunization law, which went into effect early in 1939.

Deaths resulting from pellagra totaled 117 throughout the State. This was three more than occurred during the corresponding months of last year. Pellagra is a nutritional disease, and its elimination is one of the objectives of the intensive nutritional program now being waged by the North Carolina State Board of Health.

* * *

Three outstanding officials of the province of Quebec, Canada, have just completed a visit to North Carolina, where they studied the operations of the State School Health Coordinating Service, with a view to the establishment of a similar activity in Quebec. They are: Henri Groulx, minister of health and social welfare; Dr. Jean Gregoire, deputy minister of health for the province and President of the Canadian Public Health Association, and B. O. Filteau, deputy minister of education.

In North Carolina, the Canadians visited Raleigh, Greensboro and Goldsboro, making observations, and conferred with Dr. Walter Wilkins, State School Health Coordinator; Dr. John F. Kendrick, of the Rockefeller Foundation, advisor to the school health service, and others. They also held conferences in Raleigh with Dr. Carl V. Reynolds, State Health Officer, and with health and education officials in Greensboro and Goldsboro.

News Notes From the Duke University School of Medicine

At the beginning of the autumn quarter, there were 262 medical students—76 first year, 62 second year, and 124 juniors and seniors. One hundred and sixty-nine pupil nurses were enrolled.

* * *

On October 16-18 the Annual Postgraduate Symposium on Problems of Civil and Military Emergencies was held, in which the following participated: Dr. George J. Heuer, of Cornell Medical College; Dr. John Scudder, of the College of Physicians and Surgeons, Columbia University; Dr. J. E. M. Thomson, Lincoln, Nebraska; Dr. Harry Stack Sullivan, of the Washington School of Psychiatry; Dr. Alfred R. Shands, Medical Director of the Alfred I. duPont Institute of the Nemours Foundation, Wilmington, Del.; Dr. John F. Fulton, of Yale University; Dr. Philip D. Wilson, of Columbia University; Dr. Frank D. Dickson, of the University of Kansas; Dr. Wilder G. Penfield, Director of the Montreal Neurological Institute; Dr. T. T. Mackie, of the College of Physicians and Surgeons, Columbia University; Dr. Alvan L. Barach, Columbia College of Physicians and Surgeons; Dr. George E. Bennett of The Johns Hopkins University; Dr. John M. Converse, Plastic Surgeon at the American Hospital in Britain; Captain Charles S. Stephenson, of the U. S. Naval Medical School; Dr. Russell L. Cecil, of Cornell University Medical School.

News Notes From the Bowman Gray School of Medicine of Wake Forest College

Dr. Robert Lambert, of the Rockefeller Foundation, visited the school on October 15.

* * *

Dr. Alfred Shands, Medical Director of the Alfred I. duPont Institute for Crippled Children and the duPont Foundation, visited the school on October 16.

* * *

Dr. Tinsley R. Harrison, Professor of Medicine, was honor guest at a banquet in New York given by the New York Academy of Medicine on October 4, at which time he delivered a paper on "Effects of Renal Extracts on Hypertension".

* * *

Dr. Howard H. Bradshaw, Professor of Surgery, addressed the Lenoir County Medical Society at Kinston on October 24. His subject was "Surgical Treatment of the Suppurative Diseases of the Lung".

* * *

Dr. Russell H. Oppenheimer, Dean of Emory University School of Medicine, visited the school on October 24.

* * *

Dr. Tinsley R. Harrison, Professor of Medicine, and Dr. C. C. Carpenter, Dean, attended the meeting of the Association of American Medical Colleges in Richmond, October 27, 28, and 29.

* * *

Dr. Sidney Burwell, Dean of the Harvard University School of Medicine, held a medical clinic for the students and faculty on October 31. On the afternoon of the same day he addressed the faculty, students and invited physicians, and in the evening he gave an address on "The Role of a Medical Center in Community Progress", to which the public was invited.

News Notes From the University of North Carolina

The enrollment in the School of Medicine is larger this year than in many years. There are 46 students in the first-year class and 42 in the second-year class. In addition there are 69 graduate, undergraduate and special students registered for courses in the Medical School.

* * *

The enrollment in the School of Public Health for the year is as follows: 8 physicians; 8 sanitary engineers; 36 public health nurses. Total 78.

* * *

Dean W. R. Berryhill attended the meeting of the Association of American Medical Colleges in Richmond, Va., October 27, 28 and 29.

* * *

Dr. James C. Andrews, of the Department of Biological Chemistry of the School of Medicine, and Dr. R. E. Brooks of the Alamance General Hospital at Burlington are engaged in a study of a large cystinuric family. Of this family, twenty-four descendants of one cystinuric subject have been examined for cystinuria, and a total of eight cystinurics have been found. This is the most extensive investigation of any one cystinuric family thus far made in this state. A paper on this work is now in process of preparation.

* * *

Dr. M. J. Rosenau, who is a member of the National Advisory Committee of the Work Projects Administration, attended a meeting of the Committee in Washington, D. C., on October 1 and 2.

* * *

The following members of the faculty of the School of Public Health attended the meetings of the American Public Health Association in Atlantic City, N. J., during the week of October 13: Dr. M. J. Rosenau, Dr. H. W. Brown, Dr. W. L. Fleming. Prof. Ruth W. Hay, Dr. H. G. Baity, Dr. D. F. Milam, Miss Lake Allen, Prof. H. B. Gotaas, Dr. W. P. Richardson and Dr. Roy Norton.

Dr. Milam presented a paper before the Food and Nutrition Section entitled: "A Nutritional Survey Made on a Small North Carolina Town".

Prof. H. B. Gotaas presented a paper before the Engineering Section, entitled: "The Time Factor and Chloramine Disinfection of Contaminated Swimming Pool Waters" by Emil T. Chanlett and H. B. Gotaas.

* * *

Dr. Robert Barrett Lawson, of the faculty of the School of Public Health, attended the meetings of the American Academy of Pediatrics in Boston on October 8.

* * *

Professors Ruth W. Hay and Margaret Blee and Miss Lake Allen, of the Department of Public Health Nursing, School of Public Health, attended the meetings of the North Carolina State Nurses Association in Goldsboro on October 6 to 8. Prof. Hay presented a paper on "Adventures in Learning" and Miss Allen presented a paper "On Interviewing the Syphilitic Patient".

Medical Society of Virginia

The Medical Society of Virginia held its annual meeting at Virginia Beach October 6, 7, and 8.

Neuropsychiatric Society of Virginia

The Neuropsychiatric Society of Virginia held its October meeting at University, Virginia, in the Amphitheatre of the University of Virginia Hospital, on October 22.

American College of Physicians of North Carolina

The 1941 Regional Meeting of the American College of Physicians of North Carolina was held at Chapel Hill October 31-November 1. The following program was presented:

Friday Afternoon, October 31

Symposium on Ulcerative Lesions of the Colon

1. Diagnosis and Management of Tuberculous Ulcerative Colitis—Dr. C. D. Thomas, Sanatorium.
2. Concepts as to the Etiology of Non-Specific Ulcerative Colitis—Dr. O. Norris Smith, Greensboro.
3. Management of Non-Specific Ulcerative Colitis Dr. C. Graham Reid, Charlotte.
4. Amoebic Dysentery in North Carolina — Dr. Julian Ruffin, Durham.

Friday Evening, October 31

Dinner, Carolina Inn

Toastmaster—Dr. Charles Hartwell Cocke, Asheville, Governor for North Carolina, American College of Physicians.

Address—"Hereditary Diseases Which Wreck Childhood." — Dr. William Allan, Bowman Gray School of Medicine, Wake Forest College, Winston-Salem.

Saturday Morning, November 1

1. Functional Flatulence and Its Treatment with Prostigmin Bromide—Dr. R. Henry Temple, Kinston.
2. Coarctation of the Aorta—Dr. Thomas W. Baker, Charlotte.
3. Sulphocyanates in Blood Pressure Control—Dr. Verne S. Caviness, Raleigh.
4. Chronic Alcoholism: Its Causation, Treatment and Results—Dr. M. A. Griffin, Asheville.
5. The Plasma Protein: Its Physiology Relative to the Normal and Failing Peripheral Circulation—Dr. Frank B. Marsh, Salisbury.

Dr. T. Preston White was Chairman of the Program Committee.

Fifth District Medical Society

The Fifth District Medical Society met at the Veterans Hospital, Fayetteville, on October 23. The following program was presented:

The Clinical Findings, Pathology and Therapeutic Management in Cases of Electric Injuries—Dr. Leo Alexander, Duke University, Durham.

Allergy in General Practice—Dr. William Jacobs, Newark, N. J.

Coronary Heart Disease—Dr. W. S. Thiele and Dr. L. J. Pate, Veterans Hospital, Fayetteville.

Chemotherapy—Dr. F. C. de Larenzo, New York City.

Treatment of Plastic Surgical Problems—Dr. Randolph R. Jones, Duke Hospital, Durham.

Following the scientific program dinner was served and the annual election of officers was held.

Seventh District Medical Society

The Seventh District Medical Society met at the Gaston Country Club, Gastonia, November 5, at 2 p. m. The meeting was called to order by Dr. R. H. Crawford, Councilor for the District, and the following program was presented:

The Management of Occiput-posterior Position—Dr. W. W. McChesney, Gastonia.

Bleeding During Pregnancy — Dr. Oren Moore, Charlotte.

Effective Therapy in Chronic Alcoholism—Dr. T. B. Mitchell, Shelby.

Diagnosis and Treatment of Cardiac Arrhythmias —Dr. L. Emmett Madden, Columbia, S. C.

The Procurement of Doctors for the Reserve Corps of the Army—Major Roy C. Tatum, M. C., Knoxville, Tenn.

Suggestions for the Use of Chemotherapy in the Practice of Pediatrics — Dr. Jasper S. Hunt, Charlotte.

At the banquet, which was held at 7 p. m., Dr. W. M. Roberts of Gastonia gave the Address of Welcome, and the response was given by Dr. W. C. Bostic. Sr., of Forest City. Following the banquet an address on "The Welfare of Our State Society" was given by Dr. F. Webb Griffith of Asheville. Dr. Paul H. Ringer, also of Asheville, President of the Southern Medical Association, gave the scientific address. His subject was "The Evolution of Tuberculosis".

Officers of the Seventh District are Dr. N. E. Lubchenko, Harrisburg, president; Dr. L. N. Glenn, Gastonia, vice president; and Dr. H. C. Thompson, Shelby, secretary.

Eighth District Medical Society

The Eighth District Medical Society met on October 28 at the Mount Airy Country Club. At the afternoon session, beginning at 2:30, the following program was presented:

1. The Family Physician and the Oculist—W. P. Speas, M.D., Winston-Salem.
2. Present Day Management of Trauma and Its Associated Syndrome Shock—R. N. Harden, M.D., Greensboro.
3. The Inflamed Pelvis — Carl V. Tyner, M.D., Leaksville.
4. Spontaneous Epiploitis with Case Reports—F. C. Hubbard, M.D., John W. Morris, M.D., North Wilkesboro.
5. Late Post Operative Follow-Up Statistics in Chronic Appendicitis — James F. O'Neill, M.D., Bowman Gray School of Medicine, Winston-Salem.

Dinner was served at 7:00, and Mr. Henry Dwire of Duke University was the guest speaker for the evening session. Officers of the Society are Dr. R. E. Smith, Mt. Airy, president; Dr. James H. McNeill, North Wilkesboro, District Councilor; Dr. E. C. Ashby, Mount Airy, vice president; and Dr. Roy C. Mitchell, Mount Airy, secretary-treasurer.

The Thermal Belt Medical Society

The Thermal Belt Medical Society met at the Cleveland Hotel, Shelby, on October 16. Dinner was served at 7 p. m., and the following program was presented after dinner:

Effective Therapy in Chronic Alcoholism—Dr. T. B. Mitchell, Shelby.

Discussion by Dr. W. J. Lackey, Fallston.

The Local Use of Sulfonamides—Dr. William St. J. Jervey, Tryon.

The Parental Use of Sulfonamides—Drs. L. W. Hagna and Paul McBee, Marion.

Observation in China—Dr. L. L. Wilkinson, Rutherfordton.

Buncombe County Medical Society

At the first October meeting of the Buncombe County Medical Society, held on October 6, Dr. Mark Griffin spoke on "Chronic Alcoholism". The discussion was opened by Dr. Burke Suitt. On October 20, Dr. Julian Moore gave a paper on "Regional Ileitis", which was discussed by Dr. A. B. Craddock.

Burke County Medical Society

The Burke County Medical Society held its quarterly meeting October 13 at the Grace Hospital at Morganton. A paper by Dr. Carl Brunts of Asheville, "Present Day Trends and Therapy in the More Common Genito-Urinary Diseases", was read by Dr. Brunts' Associate, Dr. W. L. Grantham. Dr. C. H. Armentrout gave a paper on "Potassium Thiocyanate Therapy in Hypertension".

Caldwell County Medical Society

The Caldwell County Medical Society held a dinner meeting at the home of Dr. A. A. Kent, Jr., in Granite Falls on October 23. Following a short business meeting, at which the society voted unanimously to receive Dr. Harry S. Hickman into membership, Dr. Kent gave a paper on "The Use of Amidopyrine in Acute Rheumatic Fever."

Forsyth County Medical Society

The Forsyth County Medical Society met in Winston-Salem at the City Memorial Hospital on October 14. Dr. James F. Marshall gave a paper on "Meckel's Diverticulum" and Dr. W. H. Sprunt spoke on "Thrombophlebitis". The Society voted to receive the following doctors into membership: Drs. R. L. Bailey, Jr., Howard Bradshaw, Arthur Grollman, C. M. Norfleet, Jr., N. M. Webster, and John R. Williams. Doctors received into membership at the September meeting of the Society were: Drs. George T. Harrell, Felda Hightower, and H. M. Vann.

Harnett County Medical Society

The Harnett County Medical Society met on October 6. A paper on the "History of Medicine in Harnett County" was given by Dr. A. T. Wyatt of Lillington.

Mecklenburg County Medical Society

The Mecklenburg County Medical Society held its first October meeting on October 7. Dr. T. C. Bost spoke on "Multiple Associated Ulcers of the Stomach and Duodenum", and Major E. A. Keeny, U.S.M.C., discussed "Medical Problems Concerned With Civilian Population and Soldiers During War Maneuvers in the Carolinas." On October 21 Dr. R. Z. Query gave a paper on "Hyperparathyroidism" and Dr. A. D. Taylor spoke on the "Present Status of Fever Therapy".

Wayne County Medical Society

The Wayne County Medical Society met in Goldsboro on October 3. Dr. C. E. Howard discussed "Color Photography in Skin Diseases", with illustrative slides.

Wanted—Medical Journals

The publishers are completely out of copies of the **North Carolina Medical Journal** for April, 1940 and April, 1941. The Library of Congress in Washington wishes a complete bound volume of 1940 issues and we are unable to supply it unless we can secure a copy of the April issue. If you can spare a copy of either April issue, 1940 or 1941, please mail to the **North Carolina Medical Journal**, Box 456, Winston-Salem. The publishers will reimburse you.

Children's Bureau Needs Maternal and Child Health Specialists

Employment registers are to be established by the Civil Service Commission to fill maternal and child health specialist positions in the Children's Bureau of the Department of Labor. Vacancies in similar positions in State agencies cooperating with the Children's Bureau may also be filled from these registers at the request of the States concerned. The examination announcement just issued by the Civil Service Commission to recruit persons for these positions which pay from $3,200 a year to $5,600 a year allows the filing of applications until November 15, 1941.

There are three options in which persons may qualify,—pediatrics, obstetrics, and orthopedics. A written test will not be given for these positions. Competitors will be rated on their education, experience and corroborative evidence. Applicants must have graduated from a medical school of recognized standing with an M.D. degree and must have served a 1-year internship. In addition they must have had full-time post-internship clinical training as well as other appropriate experience in the option selected and in the type of work in which they seek appointment.

Office of Civilian Defense

Mayor F. H. LaGuardia, Director of the Office of Civilian Defense, announces the appointment of Miss Marian G. Randall as Nursing Consultant in the Medical Division of the Office of Civilian Defense.

Miss Randall is on leave of absence from the Henry Street Visting Nurse Service, New York City, where she is Assistant Director.

For eight years a member of the Research Staff of the Milbank Memorial Fund of New York City, Miss Randall conducted studies of public health nursing as related to administrative practices. A series of these studies has been published in pamphlet form.

News Notes

Dr. Paul Ringer of Asheville has been appointed by Governor Broughton to the Board of Trustees of the North Carolina Sanatoria for Tuberculosis.

* * *

Dr. Aubrey Hawes of Charlotte presented a paper before the September meeting of the Chesterfield County (S. C.) Medical Society. His subject was "Present Status of Prostatic Surgery".

* * *

Dr. C. L. Corbett of Dunn has been appointed to the Dunn School Board.

* * *

Dr. H. B. Ivey, Goldsboro, has been made a Fellow in the American College of Radiology.

* * *

Dr. Edgar A. Thacker has come to Goldsboro to be associated with Dr. M. E. Bizzell in the practice of Ophthalmology and Otolaryngology.

* * *

Dr. William H. Smith of Goldsboro was elected vice president of the State Tuberculosis Association.

* * *

Dr. R. L. Garrard, formerly of Morganton, has moved to Greensboro.

CORRECTION

Dr. C. P. Jones, Jr., has asked that a correction be made in his discussion of Dr. Eugene Keiter's paper, "Treatment of Bacillary Dysentery in Infants", which appeared in the September issue of the **North Carolina Medical Journal.** On page 483 his statement was transcribed: "For approximately thirteen weeks we kept the baby on fluids by mouth." This should read: "For approximately **three** weeks we kept the patient on fluids by mouth."

AUXILIARY

RECOMMENDED 1941-1942 PROGRAM FOR THE AUXILIARY TO THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

MRS. JOSEPH ELLIOTT, *Program Chairman*

The invitation from our President to write an article for the Auxiliary section of the November JOURNAL was an answer to the Program Chairman's desire to get suggestions and plans for programs before county auxiliary program chairmen and before others who are concerned about them.

As our name signifies, we are organized to aid—to be auxiliary to—the Medical Society.

What is the duty of the program chairmen "in living up to this name?" To plan a program that will "attract new members, increase membership at each meeting and stimulate interest in the educational work as suggested by the Medical Society."

One of the first needs of each county auxiliary, then, is an active program chairman. The State Program Chairman can formulate a general plan for programs and can gather approved material, but the county program chairman must make the individual and special program to be given before a certain auxiliary.

> Will each county program chairman please mail her name and address, with that of the president of her auxiliary, to the State Program Chairman as soon as possible?

In answer to an appeal in my behalf from Dr. Roscoe McMillan, Secretary-Treasurer of the State Medical Society, Dr. Bauer, Director of the A. M. A. Bureau of Health Education, writes me that special emphasis this year will be on *national defense* and *nutrition.*

Dr. Carl V. Reynolds, State Health Officer, suggests *nutrition* and *control and cure of venereal diseases* as the outstanding themes this year during our preparedness program, and recommends that we "organize local committees to stimulate public interest in these subjects."

Mrs. William Hibbetts, National Program Chairman, stresses the importance of planning programs which will educate the doctor's wife for her part in the defense program of our country. She reminds us that *nutrition* is one of our national problems, that Germany provided for this part of her war program, and that Great Britain has learned that an adequate diet is one of her chief problems. The health and the morale of any people are built on proper diet. It is not only people of low incomes who suffer from malnutrition, but many of means who are not properly informed and do not use the food that is available. "Foods, personal likes and dislikes, as well as lack of nutritional knowledge, are primarily responsible for these." Mrs. Hibbetts suggests that "First Aid" lessons be incorporated in our program. A twenty-hour nutrition course and "First Aid" lessons are to be had through the American Red Cross and are most timely. Because these are held by qualified persons only, the A. M. A. Bureau of Health Education thinks it wise that, unless the Auxiliary includes a person well trained in nutrition, it would be better for its members to organize and promote these courses rather than give them.

Last, but not least, comes "a gentle reminder", which we consider "a royal command", from our own President, Mrs. Smith, in this form: "Can programs on the two Bed Funds and Endowment Fund and Student Loan Fund be included?"

As Program Chairman, I recommend that our program studies for the coming year be chosen in accordance with the above suggestions; that the county program chairman have, and read *Hygeia,* especially a series of articles, "Essentials of an Adequate Diet" by Dr. Ruth Cowan Clouse; that she read the *Bulletin,* particularly Mrs. Hibbett's article, "The Doctor's Wife and Defense" in the Post-Convention number; that she familiarize herself with other authentic, available material on *nutrition* and *on control and cure of venereal diseases,* making use of health publications listed below; that she consider herself a committee of one to

stimulate, through carefully planned programs for her auxiliary, public interest in these subjects; that she encourage her membership, through these programs, to take advantage of the First Aid and Nutrition courses being given by the Red Cross; that she have the local advisory council approve the program, or any proposed project, before undertaking it in her group; and finally, that she feel free to ask help, in securing speakers or material on special subjects, from the State Program Chairman.

Sources of Program Material

Hygeia, The Health Magazine, American Medical Association, 535 North Dearborn Street, Chicago, Illinois.

Bureau of Health Education, same address.

Bulletin of the Woman's Auxiliary to the American Medical Association, Mrs. Charles Werner, Circulation Manager, 531 North 24th Street, St. Joseph, Missouri.

Bureau of Home Economics, Department of Agriculture, Washington, D. C.

To be had on request to the State Program Chairman:

"Nutrition, The Armor of Robust Health," The Nutrition Advisory Committee to the Coordinator of Health, Welfare, and Related Defense Activities.

"Twenty Questions, on 'Enriched' Flour and Bread," Nutrition Division, Office of Coordinator of Health, Welfare, and Related Defense Activities.

"Eat The Right Food," Bureau of Home Economics, United States Department of Agriculture.

In the hands of the State Program Chairman *for lending*, if returned promptly, are:

"Information Please", by Mrs. William Hibbetts.

"An Auxiliary Member Should Know", by Mrs. Bonar White.

"Health Publications of A. M. A. Price List"—1941.

"Nutrition Study Suggestions for American Medical Association Women's Auxiliaries", from A. M. A. Bureau of Health Education.

"Canned Food Reference Manual", American Can Company, 230 Park Avenue, New York.

"History of McCain Bed", compiled by Mrs. A. A. Kent.

"History and Duty of Loan Fund Chairman", compiled by Mrs. R. A. Moore.

If there is no local Red Cross Chapter, inquiries can be addressed to Miss Melva Bakkie, Nutrition Consultant, National Red Cross, Washington, D. C.

Information can be obtained, also, from the State Nutrition Committee Chairman, Dr. Carl V. Reynolds, Raleigh.

Speakers

For speakers on the nutrition program, Dr. Carl Reynolds suggests that you contact: Dr. J. F. Kendrick, Consultant, or Dr. Walter E. Wilkins, Coordinator, of the School Health Coordinating Service, State Board of Health, Raleigh, or Dr. D. F. Milam, Cooperative Nutrition Study, Chapel Hill.

For speakers on venereal diseases, Dr. J. C. Knox, Director of Epidemiology, State Board of Health, Raleigh; Dr. John J. Wright, or Dr. William L. Fleming, both of the School of Public Health, University of North Carolina, Chapel Hill.

As speakers on the two bed funds and Student Loan Fund, contact our own well informed members: Mrs. P. P. McCain, Sanatorium; Mrs. James Buren Sidbury, 15 North Fifth Street, Wilmington; or Mrs. C. F. Strosnider, Goldsboro.

Following is a list of North Carolina physicians qualified to speak before auxiliary groups, who will, Dr. Roscoe D. McMillan feels sure, be glad to cooperate in any way possible:

Dr. George F. Carrington	Burlington
Dr. F. H. Garris	Lewiston
Dr. S. M. Bittinger	Black Mountain
Dr. Louis W. Elias	Asheville
Dr. F. Webb Griffith, President Medical Society of the State of North Carolina	Asheville
Dr. Julian A. Moore	Asheville
Dr. Paul H. Ringer	Asheville
Dr. James W. Vernon	Morganton
Dr. Caroline McNairy	Lenoir
Dr. Ben F. Royal	Morehead City
Dr. Ben Gold	Shelby
Dr. W. J. Lackey	Fallston
Dr. H. C. Thompson	Shelby
Dr. Robert S. McGeachy	New Bern
Dr. O. L. McFadyen	Fayetteville
Dr. M. T. Foster	Fayetteville
Dr. W. T. Rainey	Fayetteville
Dr. J. A. Shaw	Fayetteville
Dr. J. R. Terry	Lexington
Dr. W. R. Berryhill, Dean, School of Medicine, University of North Carolina School of Medicine	Chapel Hill
Dr. W. C. Davison, Dean, Duke University School of Medicine	Durham
Dr. F. M. Hanes	Durham
Dr. Arthur H. London	Durham
Dr. I. H. Manning	Chapel Hill
Dr. N. P. Battle	Rocky Mount

Dr. B. C. Willis.....Rocky Mount
Dr. Paul A. Yoder.....Winston-Salem
Dr. Wingate M. Johnson, Editor **North Carolina Medical Journal**.....Winston-Salem
Dr. Coy C. Carpenter, Dean Bowman Gray School of Medicine of Wake Forest College .....Winston-Salem
Dr. E. A. MacMillan.....Winston-Salem
Dr. J. B. Whittington.....Winston-Salem
Dr. F. M. Houser.....Cherryville
Dr. L. N. Glenn.....Gastonia
Dr. Thomas L. Carter.....Gatesville
Dr. N. C. Daniel.....Oxford
Dr. Fred M. Patterson.....Greensboro
Dr. D. W. Holt.....Greensboro
Dr. C. W. Hudson.....Greensboro
Dr. Marion Y. Keith.....Greensboro
Dr. R. O. Lyday.....Greensboro
Dr. Frank A. Sharpe.....Greensboro
Dr. Frederick R. Taylor.....High Point
Dr. W. G. Suiter.....Weldon
Dr. J. R. McCracken.....Waynesville
Dr. J. Gaddy Matheson.....Ahoskie
Dr. R. L. Murray.....Raeford
Dr. H. F. Easom.....Sanatorium
Dr. P. P. McCain.....Sanatorium
Dr. C. D. Thomas.....Sanatorium
Dr. James W. Davis.....Statesville
Dr. Ross S. McElwee.....Statesville
Dr. Battle A. Hocutt.....Clayton
Dr. Waylon Blue.....Jonesboro
Dr. Floyd L. Knight.....Sanford
Dr. Vance P. Peery.....Kinston
Dr. Paul F. Whitaker.....Kinston
Dr. L. A. Crowell, Jr.....Lincolnton
Dr. John W. Williams.....Williamston
Dr. Guy S. Kirby.....Marion
Dr. Hamilton W. McKay.....Charlotte
Dr. Oren Moore.....Charlotte
Dr. John Q. Myers.....Charlotte
Dr. Andrew D. Taylor.....Charlotte
Dr. C. A. Peterson.....Spruce Pine
Dr. J. G. N. Cushing.....Pine Bluff
Dr. C. R. Monroe.....Pinehurst
Dr. J. B. Sidbury.....Wilmington
Dr. H. D. Walker.....Elizabeth City
Dr. K. B. Pace.....Greenville
Dr. W. I. Wooten.....Greenville
Dr. Thomas M. Watson.....Greenville
Dr. G. C. Milham.....Hamlet
Dr. J. Fred Nash.....St. Pauls
Dr. John B. Ray.....Leaksville
Dr. Carl V. Tyner.....Leaksville
Dr. C. W. Armstrong.....Salisbury
Dr. Robert H. Crawford.....Rutherfordton
Dr. J. Street Brewer.....Roseboro
Dr. E. A. Livingston.....Gibson
Dr. J. G. Faulk.....Monroe
Dr. J. H. Wheeler.....Henderson
Dr. Hubert B. Haywood.....Raleigh
Dr. J. C. Knox.....Raleigh
Dr. Ben J. Lawrence.....Raleigh
Dr. A. S. Oliver.....Raleigh
Dr. Hubert A. Royster.....Raleigh
Dr. A. C. Bulla.....Raleigh
Dr. Carl V. Reynolds, State Health Officer .....Raleigh
Dr. C. H. Peete.....Warrenton
Dr. Frank L. Whelpley.....Goldsboro
Dr. Donnell B. Cobb.....Goldsboro
Dr. H. B. Ivey.....Goldsboro
Dr. S. B. McPheeters.....Goldsboro
Dr. William S. Smith.....Goldsboro
Dr. Charles F. Strosnider.....Goldsboro
Dr. James H. McNeill.....North Wilkesboro
Dr. George W. Mitchell.....Wilson

In Memoriam

HOUSTON B. HIATT, M.D.

By I. T. Mann, M.D.

Houston B. Hiatt, M.D., died August 28, 1941, in a hospital at Tarpon Springs, Florida, after a lingering illness.

Dr. Hiatt was born in Greensboro, North Carolina, on September 16, 1886, the only child of the late J. Rufus Hiatt and Mrs. Ella Hiatt. At the age of 7 he moved with his parents to Fayetteville, and five years later to Clinton, where his mother lives at the present time.

He received his early education in the elementary and high schools of Clinton. He also attended Horner's Military Academy, and the University of North Carolina, and in June, 1907, graduated from the University of Maryland with the degree of Doctor of Medicine. He served his internship in Johns Hopkins Hospital.

One month after graduating he married Miss Kathleen Sadtler, of Baltimore, Maryland. To this union were born three children—a son who died in infancy; Houston, Jr., who died in 1929; and "Billie" (Mrs. Ned McEachern), of Charlotte, who survives. Also surviving are his widow, who lives in Oldsmar, Florida; his mother, Mrs. Ella Hiatt, of Clinton; and one grandson, Teddy McEachern, of Charlotte.

Dr. Hiatt was long active in medical affairs in North Carolina. He began practice in Clinton, but soon moved to Asheboro, where he practiced until moving to High Point in 1913.

He was a faithful member of the Guilford County Medical Society, serving as its president in 1931. He was a member of the North Carolina Medical Society, and a Fellow of the American Medical Association. He was also a charter member of the High Point Rotary Club, a member of the Board of Directors of the Salvation Army, an officer of the Episcopal Church, and a member of the Masonic Order and the Shrine.

In 1916 Dr. Hiatt joined the First North Carolina Field Hospital N. C. National Guard, and saw over a year's service on the Mexican border, as First Lieutenant, resigning to re-enter private practice upon the company's return to this state. During the World War he, with the late Dr. Hugh W. McCain, served as medical examiner on High Point's local Draft Board. He volunteered for Army duty in July, 1918, but his commission was not issued until after the Armistice, and was returned.

Dr. Hiatt maintained a life-long interest in youth. He was active in the promotion of the Boy Scout movement in High Point, and was chiefly instrumental in the formation of a Parks and Juvenile Commission in High Point, serving as its first chairman.

He was a member of the staff of the Guilford General Hospital, and of the Sternberger Hospital.

Houston Hiatt was devoted to his friends, hundreds of whom mourn his passing. There has passed from the lives of those who knew him best a friend whose particular "niche" no one else can fill.

"H. B.", as he was affectionately known, will long be remembered by all who knew him.

So I am glad, not that my brother has gone,
But that the earth he laughed and lived upon
Was my earth too;
That I had closely known and loved him,
And that
My love I'd shown.
Tears over his departure?
Nay, a smile—
That I had walked with him a little while.

BOOK REVIEWS

The Therapy of the Neuroses and Psychoses. By Samuel Henry Kraines, M.D., Associate in Psychiatry, University of Illinois, College of Medicine; Assistant State Alienist, State of Illinois; Diplomate of American Board of Psychiatry and Neurology. 512 pages. Price $5.50. Philadelphia: Lea and Febiger, 1941.

This is one of the most helpful volumes dealing with the neuroses, the psychoses, and their numerous variants that this reviewer has seen in a long time. It is based largely upon the author's own experience, as interpreted by a keenly analytical mind and flavored by abundant common sense. Numerous cases from his records illustrate the various conditions commonly encountered. The criticism might be offered that many of these cases are rather too elementary—but that is at least preferable to the far-fetched conclusions of the Freudians. The author's discussion of the part played by sex is sane and practical. He broaches a highly controversial subject when he advocates the use of hypnotism in the treatment of certain conditions. It is true that he does not regard it as a cure-all and that he recognizes its limitations; but perhaps the majority of his fellows would oppose its use in any case. Certainly a physician who used it frequently might be subject to criticism, both from his colleagues and from the public.

With this minor objection, the book can be unreservedly recommended both to practitioners and to students.

A Textbook of Ophthalmology. By Sanford R. Gifford, M.A., M.D., F.A.C.S., Professor of Ophthalmology, Northwestern University Medical School, Chicago; Attending Ophthalmologist, Passavant Memorial and Cook County Hospitals. Second edition, revised. 470 pages, with 215 illustrations. Philadelphia: W. B. Saunders Company, 1941. Cloth, $4.00.

In this second edition of Gifford's textbook the section dealing with the changes in the fundus in cardiovascular-renal disease, and the chapter on the sclera have been revised. The use of the sulfonamides in treating certain diseases of the eye, and the relationship of vitamins A and B to diseases of this organ have also been added. Fifteen new color cuts also add greatly to the value of the text.

There are several minor errors in the book, such as the use of "hyperparathyroidism" on page 427, when "hypoparathyroidism" is meant, and, in the section on disorders of metabolism and of the endocrine glands, the omission of any mention of pituitary diseases (though these are mentioned elsewhere in the book). Tumors of the hypophysis often first manifest themselves by their effects on the eyes, the patient presenting himself to the ophthalmologist before any of the later manifestations of pituitary deficiency become evident. A more general use of an x-ray of the skull by ophthalmologists in unexplained cases of optic atrophy would seem to be desirable.

The book can be recommended without qualification for the use of the general practitioner of medicine as a concise and well written resume of the conditions in the eye which he is apt to encounter.

The Pharmacological Basis of Therapeutics. By Louis Goodman, M.A., M.D., Assistant Professor of Pharmacology and Toxicology, Yale University School of Medicine, and Alfred Gilman, Ph. D., Assistant Professor of Pharmacology and Toxicology, Yale University School of Medicine. New York: The Macmillan Company, 1941. Price, $12.50.

The authors have fulfilled a long felt need for an up-to-date text on pharmacology for students and practitioners of medicine. Most of the available texts have become stereotyped in form and lack an adequate treatment of the many advances in pharmacology and therapeutics of recent years. The present volume is an excellent correlation of basic physiological principles and practical application of drugs in therapeutics. The use of this text by students and teachers of pharmacology should aid in resurrecting this subject from the lamentable state into which it has fallen in most schools of medicine. The host of medical drugs which have been introduced into medical practice in recent years are disclosed in this volume. The general practitioner will therefore find the book of value in enlightening him on the rationale of modern methods of therapy.

Vitamin Therapy in General Practice. By Edgar S. Gordon, Associate in Medicine, University of Wisconsin; and Elmer L. Sevringhaus, Professor of Medicine, University of Wisconsin. Chicago: Year Book Publishing Company, 1941.

This is an excellent, concise resume of our knowledge of the clinical application of the vitamins. Recent advances in this field have been so rapid that texts of even a few years ago are entirely inadequate. The general practitioner will, therefore, find this volume of great help in keeping up-to-date with this important field of practical medicine. Chapters on the minerals, protein, carbohydrate and fat factors in the diet, as well as those on weight control, dental problems and economics of nutrition, give the book a generally well-rounded viewpoint of the subjects which are apt to confront the practitioner.

Clinical and Experimental Investigations of the Genital Functions and Their Hormonal Regulation. By Bernhard Zondek, M.D. 260 pages, 59 figures. Baltimore: Williams and Wilkins Company, 1941. Price, $4.50.

This is a relatively short monograph which gives a summary of the clinical and experimental investigations which have been carried out during the past six years by Bernhard Zondek, one of the discoverers of the Aschheim-Zondek test. It contains an excellent survey of the historical developments in sex endocrinology, and chapters on the following subjects: the occurrence of some estrogenic substances in nature; experimental and clinical investigations on the percutaneous use of estrogenic and androgenic hormones; the effects of protracted treatment with high dosage of estrogenic hormone; morphological changes induced by prolonged treatment; clinical investigations concerning the cycle of the female organism and the mechanism of menstruation. The book is written in a simple, concise style and brings together the mass of data which the author has contributed to endocrinological science. It will prove of value to all those interested in the recent advances in female sex endocrinology, although it is probably beyond the needs and interest of the average practitioner.